1991 Ontario Roadside Seat Belt Survey Results

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ABSTRACT

In July and August of 1991, the Ministry of Transportation for Ontario conducted a roadside seat belt survey of 13,386 passenger cars, light trucks and vans with Ontario licence plates. Belt use was recorded for all occupants, and questions were asked of the drivers. The current report compares 1991 results to results of the previous roadside survey conducted in 1984, and examines belt use as a function of driver's response.

In the 1991 survey, seat belt use was 84.5% for drivers, 80.9% for adult passengers, and 84.1% for passengers aged 6-15. Child restraint rates improved substantially between 1984 and 1991. For drivers and adult passengers, the females and elderly had greater usage rates than their male and younger counterparts. Relationships were observed between distance from home, time in vehicle, opinion of seat belt law enforcement, additional variables, and seat belt usage rates.

Usage rates improved greatly between 1984 and 1991. Numerous variables were observed to influence seat belt usage and are discussed in the context of future enforcement and educational campaigns.

* * *

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RÉSULTATS DE L'ENQUÊTE ROUTIÈRE SUR LE PORT DE LA CEINTURE DE SÉCURITÉ RÉALISÉE EN ONTARIO EN 1991

James Andersen
Ministère des Transports de l'Ontario

RÉSUMÉ

En juillet et en août 1991, le ministère des Transports de l'Ontario a réalisé une enquête routière sur le port de la ceinture de sécurité auprès de 13 386 voitures particulières, camionnettes et fourgonnettes immatriculées en Ontario. On a noté si les occupants du véhicule portaient leur ceinture et posé diverses questions aux conducteurs. Le présent rapport compare les résultats de l'enquête de 1991 à ceux de l'enquête routière précédente menée en 1984, et examine les liens entre le port de la ceinture de sécurité et les réponses fournies par les conducteurs.

Lors de l'enquête de 1991, on a noté que 84,5 pour 100 des conducteurs, 80,9 pour 100 des passagers adultes et 84,1 pour 100 des passagers âgés entre 6 et 15 ans portaient leur ceinture de sécurité. Le taux d'utilisation des dispositifs de retenue d'enfants a considérablement augmenté de 1984 a 1991. En ce qui concerne les conducteurs et les passagers adultes, le taux d'utilisation de la ceinture était plus élevé chez les femmes et les personnes âgées que chez les hommes et les personnes plus jeunes. En outre, on a remarqué que la proximité du domicile, le temps passé à bord du véhicule, la perception des mesures d'application des lois régissant la ceinture et diverses autres variables influençaient le port de la ceinture de sécurité.

Les taux d'utilisation ont considérablement augmenté entre 1984 et 1991. On a remarqué que de nombreux facteurs influençaient le port de la ceinture de sécurité. Ces facteurs sont abordés dans le contexte des futures mesures d'application de la loi et campagnes de sensibilisation.

* * *

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1. INTRODUCTION

Prior to the enactment of legislation by the Ontario government on January 1, 1976, which made the use of seat belts mandatory throughout the province, the then Ministry of Transportation and Communications (MTC) completed a major province-wide survey of driver and passenger seat belt use. Since that time, seven similar surveys have taken place.

The surveys were conducted in October 1975, March 1976 (just after enforcement of seat belt laws began), and November/December 1976, May 1977, May 1978, May 1981 and May/June 1984. The three initial surveys (October 1975, March 1976 and November/December 1976) assessed only driver and passenger seat belt use. In May 1977 and May 1978, a driver attitude assessment was added which was distributed separately from the seat belt use survey; drivers who were stopped for the attitude survey were not included in the seat belt use survey and vice versa. The May 1981 survey combined, modified and condensed pertinent features of previous seat belt use and attitude surveys. New emphasis was placed on the observed use and perceived importance of child safety restraints and attitudes toward their use. An additional survey was conducted on Saturdays.

The May/June 1984 study increased the emphasis on gathering information regarding child safety restraints. Extra survey sites, most of which were scheduled for surveying on Saturdays were chosen near shopping malls in order to increase the potential of contact with vehicles containing children. Except for the inclusion of the new sites, all other aspects of the design and execution of this study mirrored those of the previous studies.

In July/August 1991 the survey was conducted at the same sites as in 1984, and adult and child restraint usage were recorded. Each site was visited during the same time of day as in previous surveys, though not necessarily on the same weekday due to scheduling logistics. Mall sites were surveyed on Saturday as they were in the past. The questions asked of the driver were changed to reflect current interests.

1.1 Sampling Plan and Procedures

The sampling plan for this survey was designed by MTC in 1975 to obtain a representative sample of Ontario drivers. This three-stage plan involved selecting areas of the province, then actual sites within these areas and, finally, drivers from the traffic stream passing these sites. Automobiles were stopped as they travelled down the street or highway. The driver was then asked to respond to various questions. Only non commercial passenger cars, vans and light trucks with Ontario plates were selected for driver interviews and belt use recording. The same protocol was used in 1991.

Interviewers recorded the observed use of seat belts by drivers and passengers, and child restraint use. The drivers were interviewed by specially-trained post-secondary education students. The questionnaire can be seen in Appendix A. These students were supervised by Ministry of Transportation for Ontario (MTO) Traffic Surveys staff working for the Traffic Management Engineering Office.

There were four survey crews, containing about three or four members each, which travelled throughout the province administering the questionnaire. Each crew consisted of a crew chief whose responsibilities included identifying and preparing the site, stopping and redirecting traffic, obtaining an accurate traffic count, and supervising the interviewing staff. Each site was prepared erecting a sign about 200 metres before the actual survey location to inform drivers to be prepared to stop.

The data were collected from 63 sites during four consecutive one-hour periods. Three other sites were not surveyed due to rain and a fourth due to unsafe traffic conditions. Sites and dates surveyed are shown in Appendix B.

1.2 Survey Sites

The sites were categorized into five regions (Northwestern, Northern, Southwestern, Central and Eastern). These regions correspond to MTO maintenance boundaries. These areas are shown in Appendix C.

In previous surveys a rural-urban distinction was also used to compare seat belt use rates. However, since 1977 the population of Ontario has increased such that the number of sites that could be classified as rural using the previous definition was small. It did not make sense to compare the majority of the sites ("urban") to a few "rural" spots. As well, in the 1984 survey the expressway and mall sites were considered separately as belt usage rates varied across groups. In the current survey all site data were combined for analysis since driver belt usage rates were virtually identical for the three groups.

1.3 Questionnaire Data

Driver and passenger seat belt use was examined with respect to four variables used in the previous survey and a number of new comparisons were made. The four variables were gender, age, seating position and region where the site was located. Responses to the questionnaire were also used to classify drivers and compare their belt usage rates. The passenger's discrete age was recorded when less than 16 years of age. For passengers 16 or older and drivers, age was categorized and recorded on the questionnaire as follows:

A - 16 to 19 years of age
B - 20 to 29 years of age
C - 30 to 39 years of age
D - 40 to 49 years of age
E - 50 to 59 years of age
F - 60 years of age and older

The methods used to restrain children under five years of age were examined separately and comprehensively in order to ascertain what percentages of the children sampled were restrained by proper child safety seats, by seat belts, or not at all.

1.4 Driver and Passenger Distribution

In the 1991 survey there were 13,836 vehicles stopped for the driver interviews at 63 sites. Of the 13,581 cases where gender was available and correctly coded, 63.4% of the drivers (8,617) were male and 36.5% female (4,964). The percentage of drivers in each age group is shown below.

Age Distribution of Drivers (Percentage)

AGE GROUP	PERCENTAGE
A (16-19)	3.4
B (20-29)	19.2
C (30-39)	26.4
D (40-49)	21.0
E (50-59)	12.7
F (60 and up)	17.3
TOTAL	100.00

There were 5,315 passengers aged 16 and over in the 13,836 cars stopped of which 5,140 had both age and gender available and properly coded. Of this number, 72.1% were female and 27.9% male. There were 190 infants less than 1 year of age and 1,048 toddlers (1 to 5 years old). There were 2,057 in the 5 to 16 year old age group. The total number of passengers regardless of age was 8,610.

2. DRIVER ANALYSIS

The following sections provide a description of driver seat belt use in Ontario. The results are based on the data collected at all the sites for the 13,836 drivers of non commercial passenger cars, vans and light trucks with Ontario plates.

Three-point seat belt systems (i.e. automatic or manual lap and shoulder belts) were required by legislation to be installed in vehicles manufactured after 1973. Belt use in the current survey refers to the use of at least a lap belt. In most vehicles lap belt use also implies the use of a three point system. A driver was not considered belted if a passive shoulder restraint was used without a lap belt.

2.1 Driver Seat Belt Use by Location

Overall, driver seat belt use was 84.5%. This is much higher than the 70% observed in the 1984 survey. The usage rate for drivers was 83.1% in the Central (n=4,732), 90.3% in the Eastern Region (n=2,880), 89.0% in the Southwestern (n=2,739), 74.5% in the Northern (n=1,818), 81.1% and in the Northwestern (n=1,362), (Figure 1). This contrasts with the 1984 survey where no differences across region were noted.

Figure 1

DRIVER BELT USE BY REGION

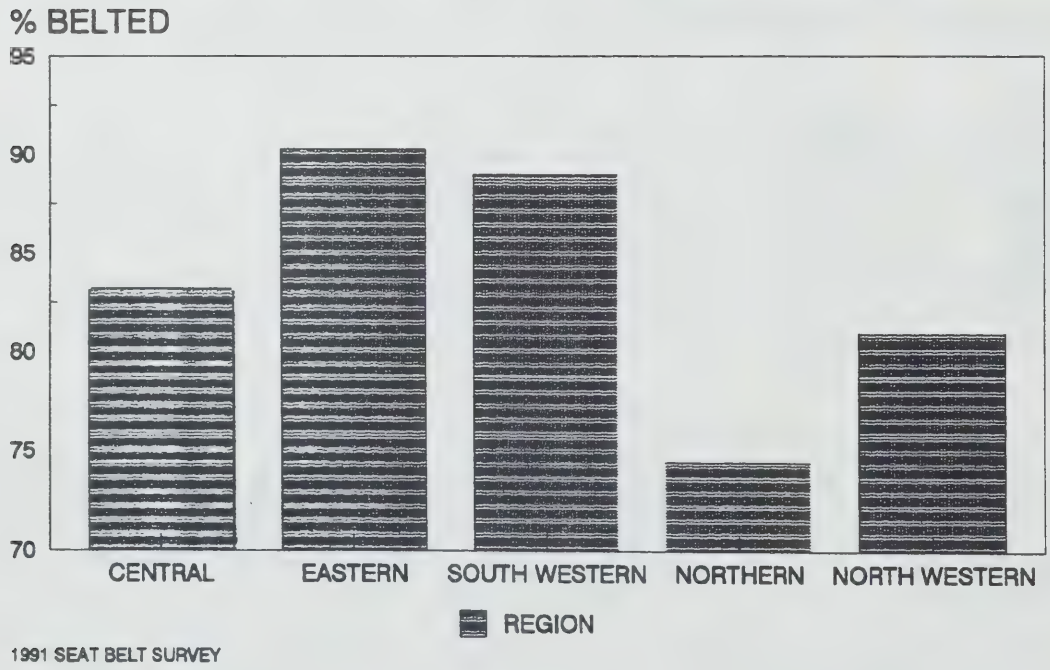
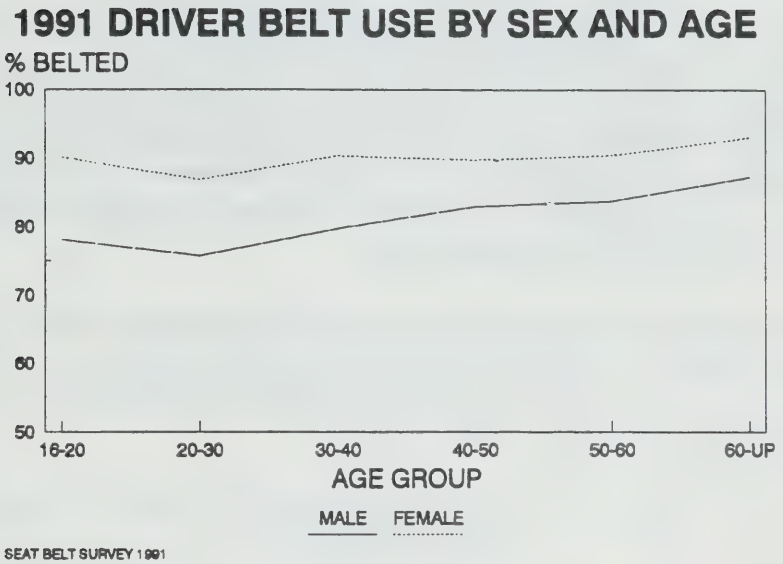


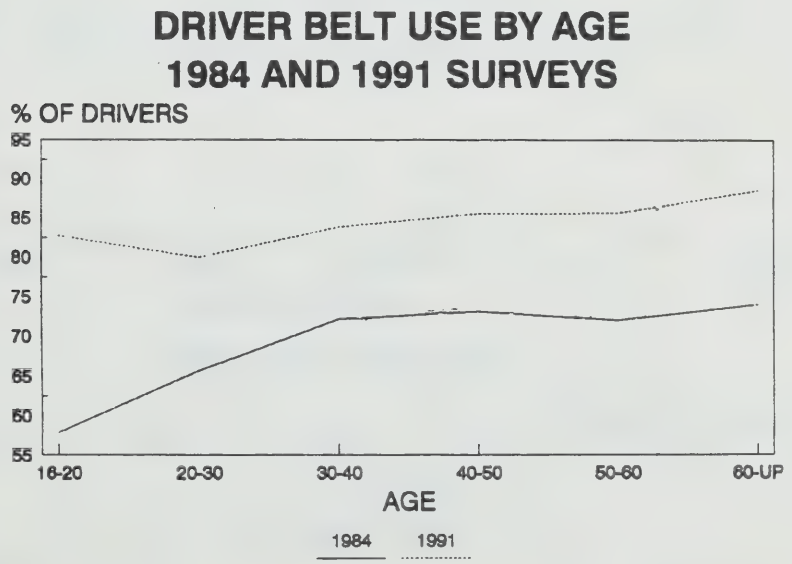
Figure 2



2.2 Driver Seat Belt Use by Demographics

Seat belt use was higher among female drivers (89.8%) than male drivers (81.5%). The higher seat belt use by females was observed across all age groups (Figure 2). Belt use by age group can be seen in Figure 3 for both the 1984 and 1991 seat belt surveys. Interestingly, in 1991 the 16 to 20 year olds had a higher belt use rate than the 20 to 30 year olds. In the 1984 survey the youngest age group had by far the lowest usage rate.

Figure 3

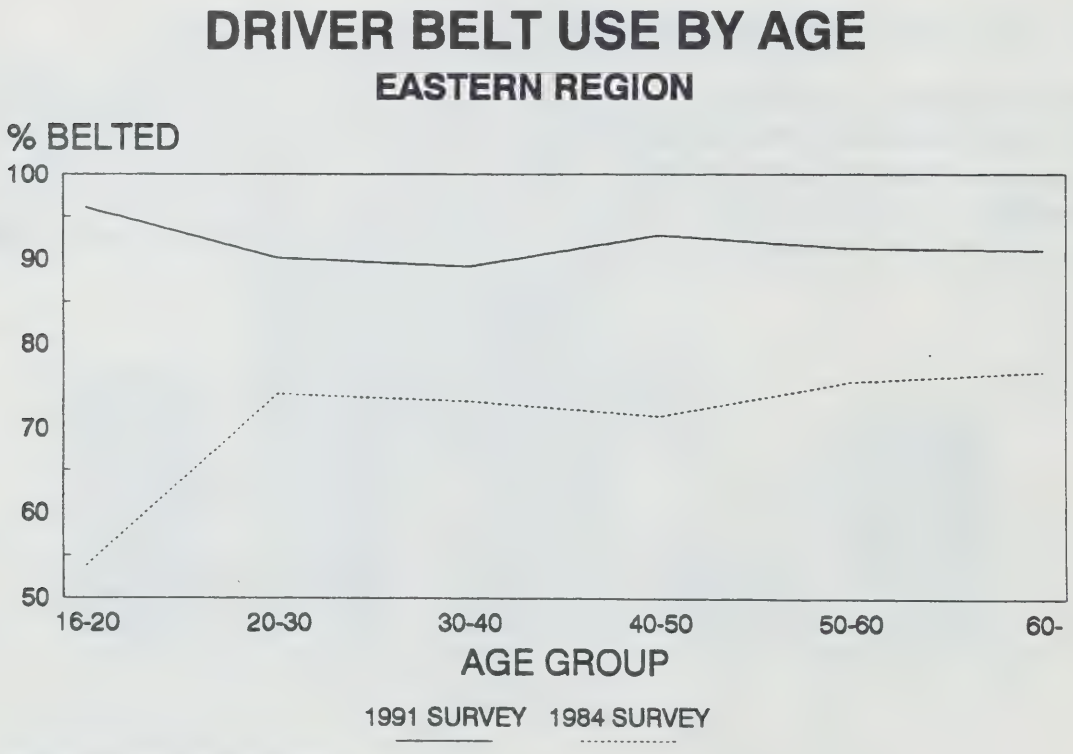


This could be seen as evidence that recent seat belt campaigns aimed at the youngest age group of drivers has been effective.

Breaking the data down by region and comparing the same region in 1984 and 1991 by age group, shows that the increase in belt use was not uniform across all regions of the province (Figures 4,5,6,7,8). In the three southern regions, Eastern, Southwestern and Central, we see that overall belt use has increased substantially with the youngest group of drivers showing the largest increase. In the Northern and Northwestern regions, however, there is only a marginal increase in overall belt use rates, with the youngest age group still having the lowest compliance rate.

The relationship between age and belt use has not changed substantially from 1984 in these two northern regions as it did in the three southern regions. It should be noted that the youngest age group of drivers made up 3.4% (n = 462) of the drivers as shown in section 1.4 compared to 4.3% in 1984 (n = 409).

Figure 4

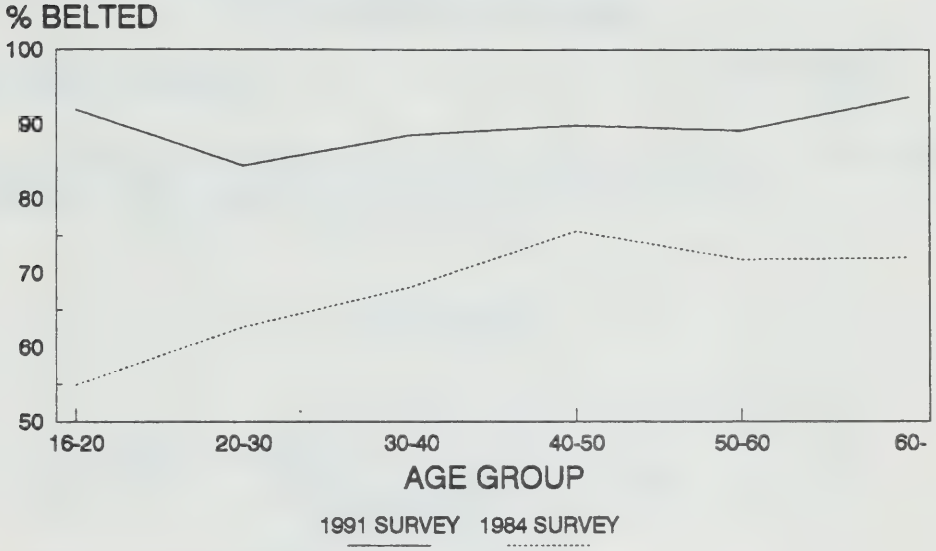


SEAT BELT SURVEY 1991 AND 1984

Figure 5

DRIVER BELT USE BY AGE

SOUTH WESTERN REGION

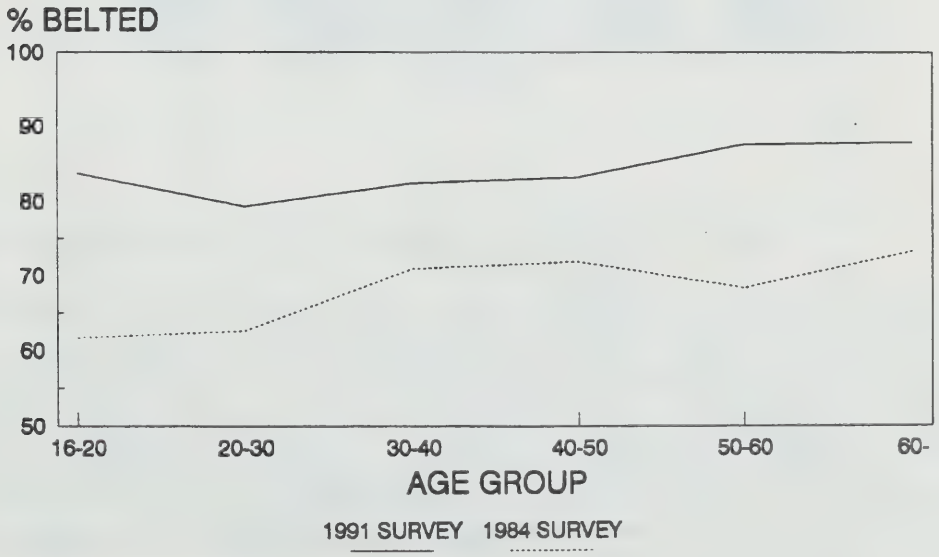


SEAT BELT SURVEY 1991 AND 1984

Figure 6

DRIVER BELT USE BY AGE

CENTRAL REGION

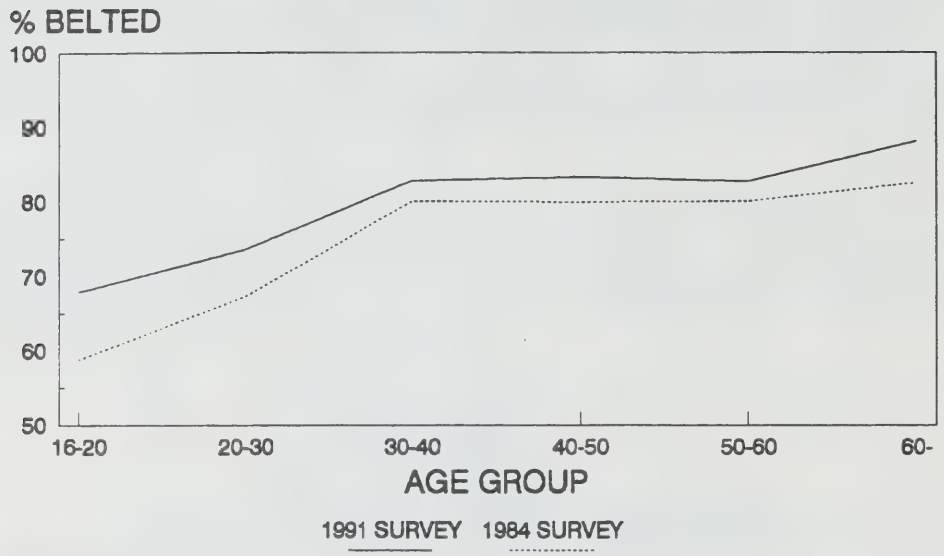


SEAT BELT SURVEY 1991 AND 1984

Figure 7

DRIVER BELT USE BY AGE

NORTH WESTERN REGION

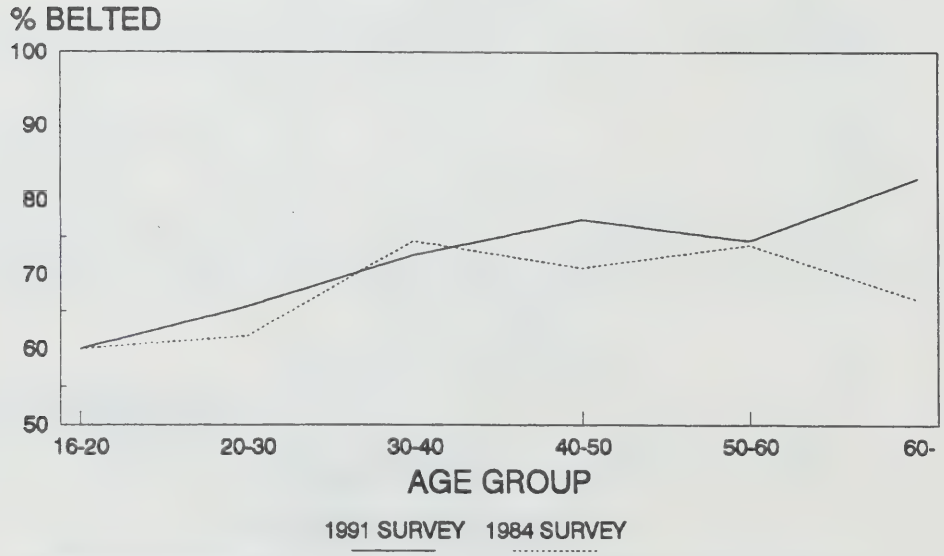


SEAT BELT SURVEY 1991 AND 1984

Figure 8

DRIVER BELT USE BY AGE

NORTHERN REGION



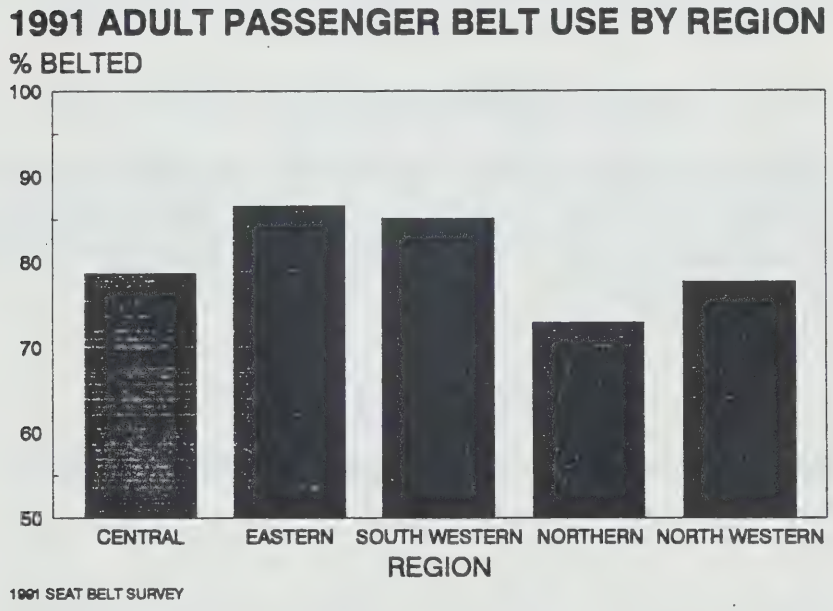
SEAT BELT SURVEY 1991 AND 1984

To summarize, of the variables examined so far, the age and sex of the driver as well as region appear to influence seat belt use. The older driver and females are more likely to be wearing seat belts as are drivers in the three southern regions. The age and sex effects were observed in the previous survey. The differences across regions were not. The three southern regions have made substantial gains in belt use since 1984.

3. PASSENGER ANALYSIS

The following sections provide a description of the use of seat belts by passengers. The results are based on data collected at the sites described previously.

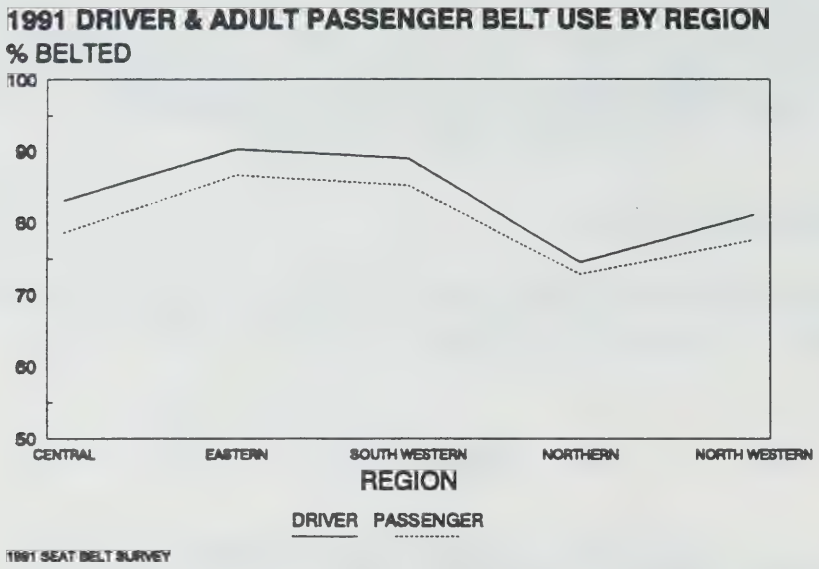
Figure 9



3.1 Passenger Seat Belt Use by Location and Position in Vehicle

Overall, passenger seat belt use for those 16 years of age and over was 80.9% This is significantly higher than the 69.6% observed in the 1984 survey. The 1991 usage rate for passengers was 78.1% in the Central (n=1654), 86.1% in the Eastern Region (N=1075), 85.3% in the Southwestern (N=1169), 73.5% in the Northern (n=759), and 76.9% in the Northwestern (n=484) (Figure 9). This contrasts with the 1984 survey where no differences across region were noted. The differences in 1991 passenger belt use across regions are similar to the differences displayed by drivers. See Figure 10 for

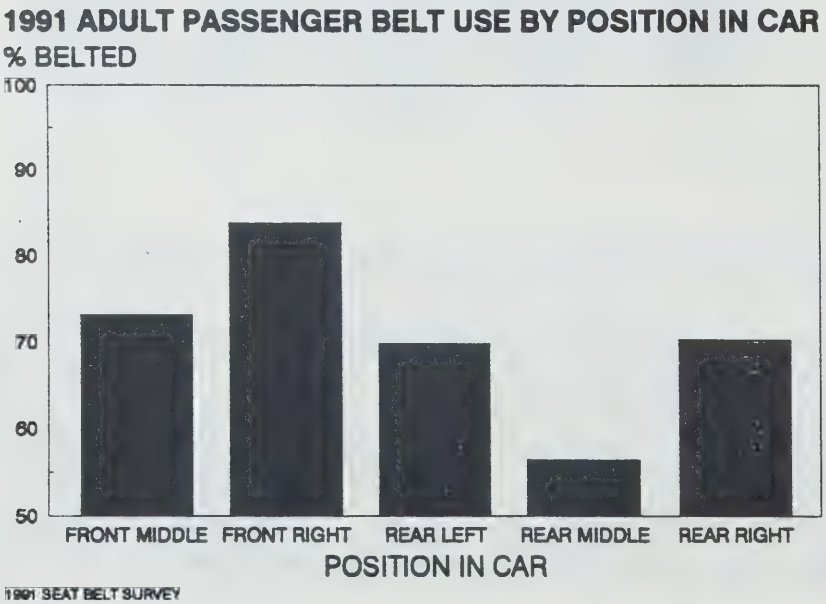
Figure 10



a comparison of driver and passenger belt use rates by region for 1991.

Front seat passengers had higher seat belt use than rear seat passengers, 83.1% versus 66.6% (16 years of age and over). Passengers seated in the rear central position, had the lowest rate of seat belt use at 57.7%. Per cent usage rates by position for adult 1991 passengers are shown in Figure 11.

Figure 11



3.2 Passenger Seat Belt Use by Demographics

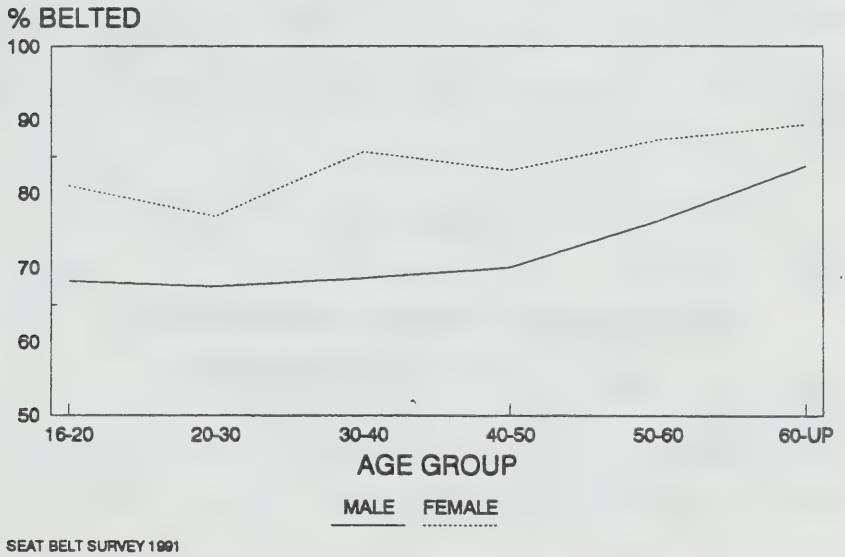
The overall usage rate for adult males was 71.5% and 84.5% for adult females. The tendency for increased use of seat belts for the older age groups was observed for both males and females with the eldest group of males having the highest male usage rate and the eldest group of females having the highest female usage rate. In every age group female usage exceeded male usage. See Figure 12 for a breakdown of usage by age and sex.

Passengers in the 5 to 16 year old age group had slightly higher belt usage rates than the adult (16 and over) age group (84.1% vs 80.9%). In 1984 there was little difference between the two age groups. The adult rate was 69.7% and the youth rate 68.2%.

Between the adult age groups there were significant differences in usage rates. The highest usage rate (88.3%) was observed in the oldest age group while the lowest usage rate was found in the 20 to 30 year age group (73.6%) similar to the pattern found in the 1991 drivers. In 1984 the youngest passenger age group had the lowest usage rate.

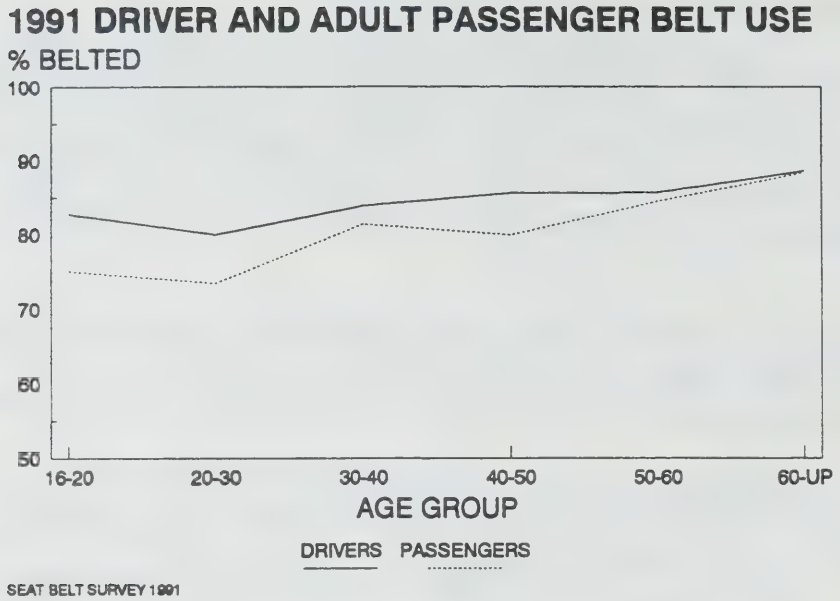
Figure 12

1991 PASSENGER BELT USE BY SEX AND AGE



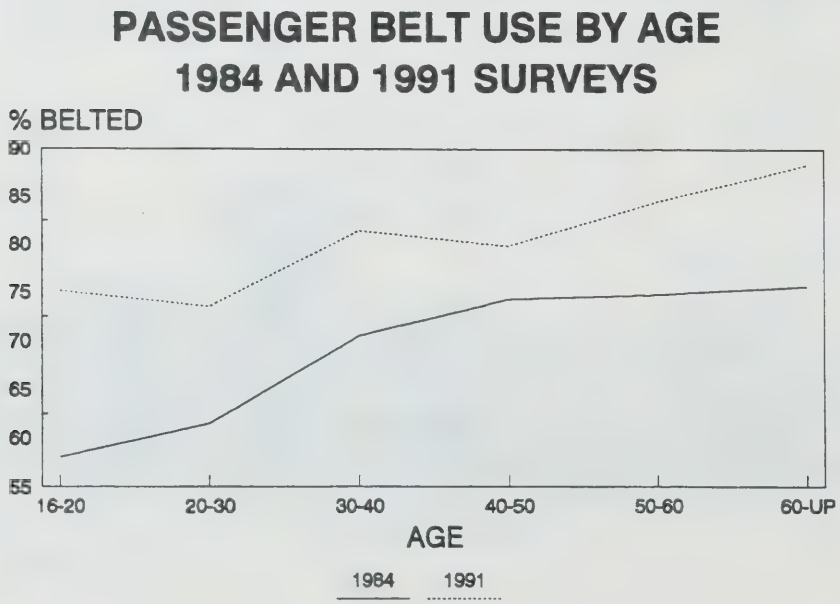
In 1991, passenger rates did not increase uniformly from the 20 to 30 age group to the eldest. The 30 to 40 year old group had a slightly higher (81.4%) usage rate than the 40 to 50 year old age group (79.95%). Otherwise the usage rate by age relationship was similar between drivers and passengers in 1991. This is illustrated in Figure 13.

Figure 13



The 1984 survey reported belt use by age and region for drivers, but did not break passenger use down by region. Figure 14 compares passenger usage rates by age for the 1984 and 1991 surveys. Passengers show the same substantial increase in overall belt use with the largest increase in the youngest adult passenger age group as was observed with drivers. However, it is not evident whether this change was consistent over all regions of the province or was weighted by a change in the heavily populated southern regions.

Figure 14



To summarize, the use of seat belts by passengers appears to be influenced by a number of factors. Front seat passengers wore seat belts more frequently than rear seat passengers, females were more likely than males to wear seat belts and belt use in general increased as age increased.

These factors were found in 1984 to be important as well. In 1984 however, no regional differences were noted. In 1991, differences in seat belt usage were noted across MTO regions for both drivers and passengers.

3.3 Overall Driver and Passenger Summary

The increase in seat belt compliance from 1984 to 1991 in drivers and passengers is substantial. There continues to be age and sex affects with the elderly and the females being more compliant. The youngest age group and the three southern regions have made the great gains in seat belt compliance.

4. CHILD RESTRAINT ANALYSIS

In Ontario, children are required to be restrained when travelling in a private vehicle. The type of restraint required varies with the child's weight and whether or not they are travelling in their parent's vehicle. All children, regardless of whom they are travelling with, from birth to 9 kg of weight (infants) are required to be restrained in a rear-facing child safety seat meeting Canadian Motor Vehicle Safety Standards. Between 9 to 18 kg of weight, children travelling in a parent's vehicle are required to be in an approved child safety seat. A lap belt can be used in place of a child safety seat when travelling in a vehicle other than the parent's. Children between 18 to 23 kg of weight must use a lap belt, with shoulder portion placed behind the back if necessary. Above that weight the seat belt assembly provided in the seating position is to be used.

The child restraint law was introduced in Ontario in two stages. The first stage came into effect November 1, 1982 and included all children born on or after that date as well as children who were 18 kg or more. After November 1, 1983, all children were included so that , from birth onwards, all private vehicle occupants are required to be appropriately restrained.

4.1 Infant Restraint

For the purpose of the survey, age rather than weight was used to define infants and toddlers, since weight would have been too difficult to estimate. A child was considered to be an infant if he/she was less than one year of age. The number of infants observed in the survey with correct coding, though small (179), was over double the number

observed during the 1984 survey (80). The 179 excludes 11 infants whose age was known but had incomplete restraint usage coding.

Figure 15

INFANT RESTRAINT COMPARISON*

1984 AND 1991 SEAT BELT SURVEYS

	1984 SURVEY	1991 SURVEY
RESTRAINED	55	93.3
NO RESTRAINT	45	6.7
CORRECTLY RESTRAINED	25	38.5
FORWARD FACING	10	47.5
OTHER INC. RESTRAINT	20	7.2

*LESS THAN ONE YEAR OF AGE (PERCENTAGES)

Figure 15 shows the results of restraint use for infants. The great majority (93.3%) of infants were restrained in some fashion (167 of 179) compared to only 55% (44 of 80) in 1984. However, only 69 (38.5%) of the infants were correctly restrained in a rear facing child safety seat. This figure is up from the 25% observed in 1984. Seven other infants were in a rear facing child restraint but were incorrectly restrained (e.g. harness or belts were either incorrectly used or were not used at all). This corresponds to a 91% correct usage rate for those in rear facing restraints. Five infants were in lap belts and one in a booster seat. Eighty-five (47.5%) others were travelling forward facing which may or may not have been appropriate for their weight. This contrasts with only five cases (6%) observed in forward facing seats in 1984.

Thus, in 167 of the 179 instances (93.3%) some attempt to restrain infants was made. Only 12 (6.7%) of the infants were observed to be without any type of restraint. This included seven (3.9%) sitting alone on the seat and five (2.8%) on an adult's lap. In 1984, 33 infants or 44% of the total were sitting on an adult's lap. This figure has decreased dramatically. Comparing the 1991 and 1984 data it appears that the public has become much more aware of the need for restraining infants. As well, the law was changed in 1989 to remove a loop hole allowing children to legally travel on laps. Provided an unoccupied position is available with a seat belt, children under 23 kg must

now be placed in that position. Education and enforcement initiatives have substantially increased restraint usage, though the public continues to make errors in the choice and use of infant restraints.

4.2 Toddler Restraint

Children over 1 and under 5 years of age were defined as toddlers (n=1,048). A total of 1,005 toddlers were observed to have complete restraint usage and age data in the survey. Forty three had age stated but incomplete restraint usage coded. They were dropped from the analysis. In the 1984 survey 834 toddlers were observed. Figure 16 shows the use of restraints for toddlers.

Figure 16

TODDLER RESTRAINT COMPARISON*

1984 AND 1991 SEAT BELT SURVEYS

	1984 SURVEY	1991 SURVEY
RESTRAINED	79.0	87.7
NO RESTRAINT	21.0	12.3
CORRECTLY RESTRAINED	12.0	20.9
ADULT BELTS	26.7	36.4
OTHER INC. RESTRAINT	40.4	30.3

*ONE TO FIVE YEARS OF AGE (PERCENTAGES)

With 881 of the 1,005 toddlers (88%) some attempt at restraint was observed. This is up from 79% in the 1984 survey. The use of forward facing child safety seats was observed in 415 cases (41%). In only 210 of these instances was the seat used correctly. This corresponds to a 51% correct usage rate for those with forward facing seats and only a 21% correct restraint rate (correct seat used correctly) when considering the total sample of toddlers. In the 1984 survey however, only 30% of toddlers in forward facing seats were correctly restrained and only 12% of the total were in forward facing safety seats correctly restrained. In the 1991 survey almost all incorrectly restrained forward facing safety seats involved the absence of a tether strap. All forward facing seats that meet the criteria for use under the Highway Traffic Act require the use of a tether strap.

Starting in 1989 all new passenger cars sold in Canada come with a tether anchorage point and bolt.

In 366 cases the toddler was using adult seat belts (36.4%) compared to only 27% in the 1984 survey. Eighty-six toddlers were in booster seats (8.6%) and 14 were in infant seats (1.4%) compared to 7.8% and 1.8% respectively in the 1984 survey. There were 14 cases (1.4%) of toddlers being held on the lap and 110 others who were on the seat unrestrained (11%). In 1984, 17% of toddlers were on the seat unrestrained and 4% on an adult's lap.

In comparing the 1991 results to those obtained in 1984 we see a substantial increase in the per cent of toddlers restrained and the percentage restrained correctly in the appropriate safety seat. However the correct use of front facing safety seats remains a problem specifically with regards to use of the tether strap. More education is required to encourage parents to use this important part of their child seat equipment. The rear facing safety seat for infants however, when used, was almost always used correctly (91% correct usage rate). Rear facing restraints do not have tether straps.

As was the case with infant restraint use, the foregoing does not describe restraint use strictly in terms of conformity to the child restraint legislation. Since age was used as a proxy variable for weight - upon which the legislation is based - it is not possible in all cases to state whether a child was restrained in accordance with the legislation. For instance, some proportion of the toddlers observed in lap belts or booster seats may have weighed enough to be considered to have been legally restrained with these devices.

5. DRIVER RESPONSES TO QUESTIONS

The following section outlines drivers' responses to the questions asked during the survey and examines belt use as a function of response. These questions were asked in order to determine whether theories developed in other jurisdictions held true in Ontario; such as drivers being more likely to use seat belts when further from home or on a pleasure trip, for example.

5.1 Purpose of Trip

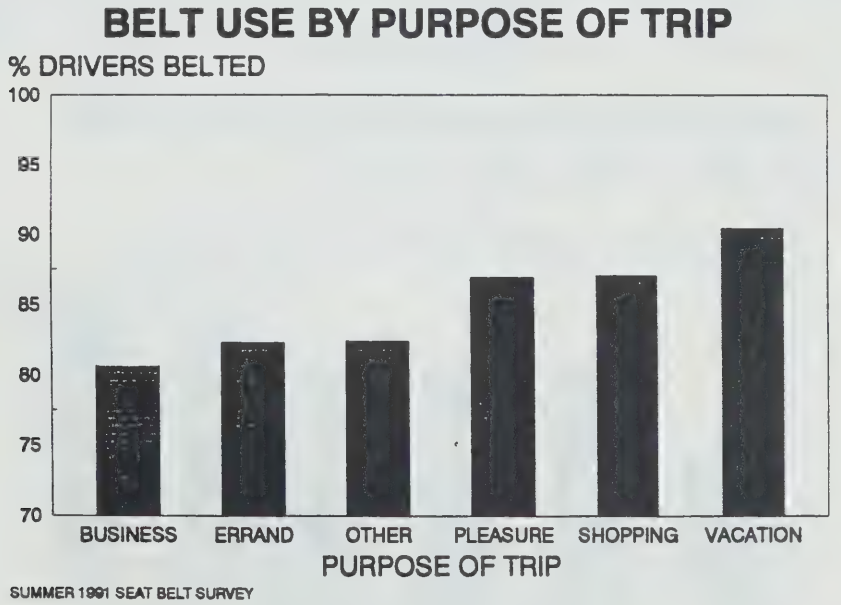
When asked the purpose of their trip the percentage of drivers per response was as follows:

Purpose	% Drivers
Business	25.5%
Errand	18.0%
Other	1.8%
Pleasure	25.3%
Shopping	26.4%
Vacation	3.0%

It should be noted that the survey took place from 10 am until 2 pm Monday thru Saturday. The midday time period and Saturday surveying undoubtably increased the proportion of "shopping" and other responses at the expense of "business" responses. The current and previous surveys were conducted in this time slot to ensure the safety of surveying crews. High traffic volumes during rush hour make safe surveying difficult.

Driver belt use varied by stated purpose of trip (sig $p<.001$ Chi Square) with the lowest use rate amongst "business" respondents and the highest for those on vacation. Figure 17 shows a graph of the results while the actual values can be seen on the following page.

Figure 17

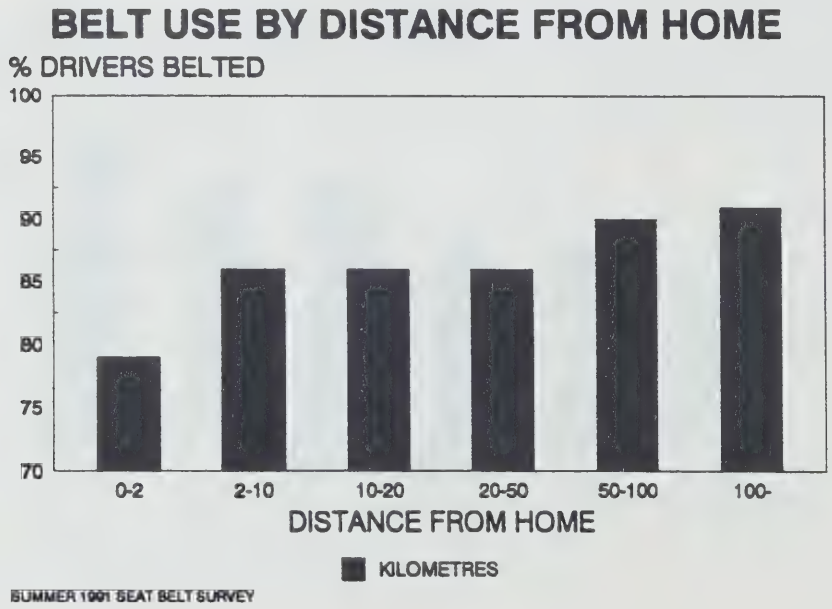


Purpose	% Belted
Business	80.7
Errand	82.3
Other	82.4
Pleasure	86.9
Shopping	87.1
Vacation	90.4

5.2 Distance From Place of Residence

The average response for the question of "How far are you from your place of residence" was 35.3 kilometres (all values 2000 km or greater were removed from the sample, 0.1%). Distance from place of residence was categorized into the following groups; 0-2, 2-10, 10-20, 20-50, 50-100, and 100 km and over. Belt use by distance group is shown in Figure 18. Belt compliance increased with distance from a low of 78.6% in the 0-2 km group to 91.1% in the 100 km and over group (sig p<.001 Chi Square).

Figure 18



The actual values by distance group were as follows:

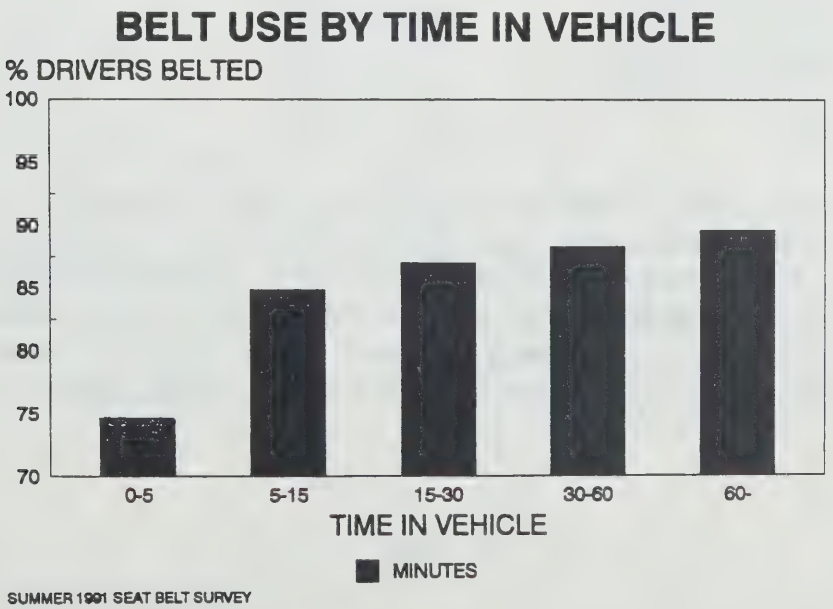
Distance	% Belted
0-2	78.6
2-10	85.9
10-20	86.0
20-50	86.1
50-100	89.7
100-up	91.1

The average distance from home for males was 40.3 km and 26.9 km for females.

5.3 Length of Time in Vehicle

The average response to the question of "What do you estimate will be the total time spent in your car....." was 43.1 minutes (all values of 900 minutes or more were removed from the sample, 0.1%). Time was categorized into the following groups; 0-5, 5-15, 15-30, 30-60 and 60 minutes and over. Belt use by time category is shown in Figure 19. Belt compliance increased with time in vehicle with the shortest time having the lowest compliance (75%) and the greatest time period the highest compliance (90%, sig p<.001 Chi Square).

Figure 19



The actual values by time group were as follows:

Time	% Belted
0-5	74.6
5-15	84.9
15-30	87.0
30-60	88.4
60-up	89.6

The males had an average time in vehicle of 47.3 minutes and females 35.6 minutes.

The following group of questions were added in an attempt to determine target groups for public education and to evaluate the effects of enforcement and collisions on belt use.

5.4 Reasons For Wearing Belts

Those drivers wearing seat belts gave the following reasons for doing so;

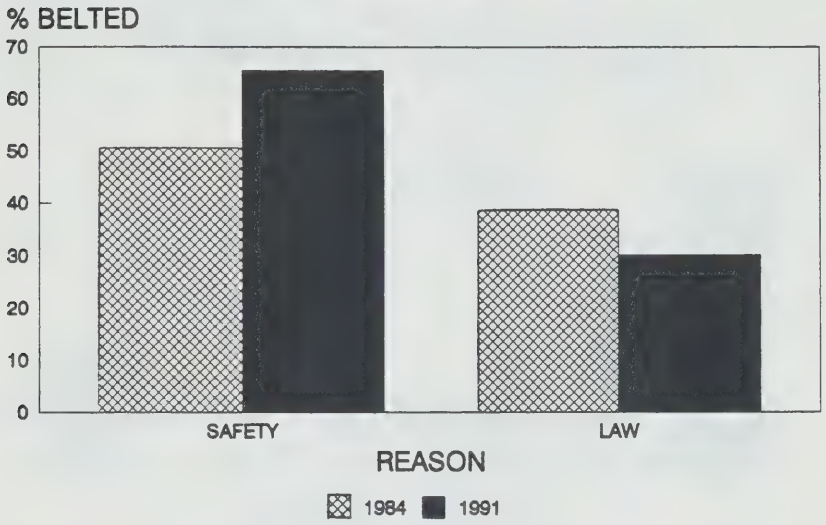
Response	% Giving Response
Law	24.1%
Law and Safety	6.3%
Law and Habit	0.5%
Safety	57.1%
Safety and Habit	1.9%
Safety and Law	0.1%
Safety and Other	0.1%
Other and Habit	9.7%
Other	0.4%

The total proportion giving safety as a first or second reason was 65.5% illustrating the effectiveness of seat belt campaigns. The importance of enforcement must also be recognized due to the frequency of "law" as a first or second reason for belt wearing (30.9%). The same question asked in 1984 showed 50.6% gave safety as a first or second reason for wearing belts and 38.6% law as a first or second reason. From 1984 to 1991 it appears safety has increased and law decreased as a reason for belt wearing (Figure 20).

Figure 20

SAFETY AND LAW AS REASONS FOR BELT USE

1984 AND 1991



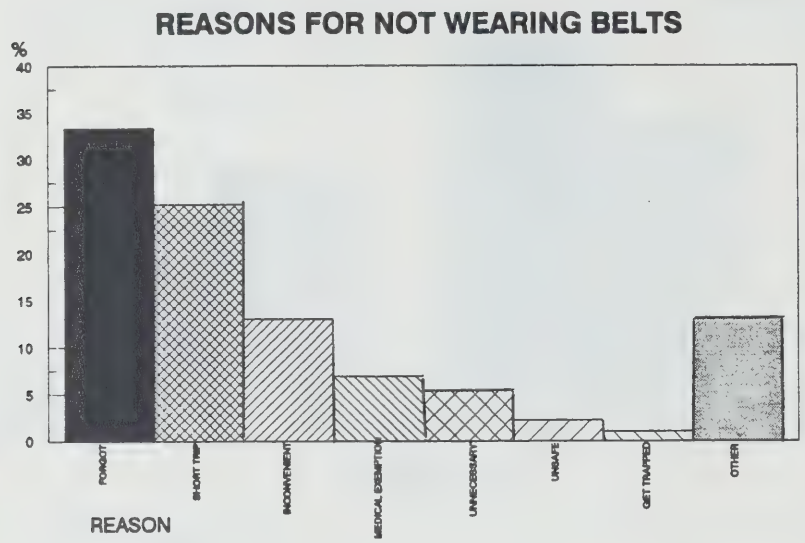
5.5 Reasons For Not Wearing Belts

Those drivers not wearing belts gave the following reasons for not doing so;

Response	% Giving Response
Forgot	33.4%
Short Trip	25.2%
Other	13.1%
Inconvenient	13.0%
Medical Exemption	6.9%
Unnecessary	5.3%
Unsafe	2.2%
Get Trapped	0.98%

Figure 21 shows a graph of the percentage by response.

Figure 21



The same question asked in 1984 provided the reasons;

Response	% Giving Response
Forgot	23.6%
Inconvenient	22.9%
Unnecessary	21.8%
Medical	7.7%
Not Safe	2.4%
Pregnancy	1.0%

No explanation was given as to the remaining 20.6%.

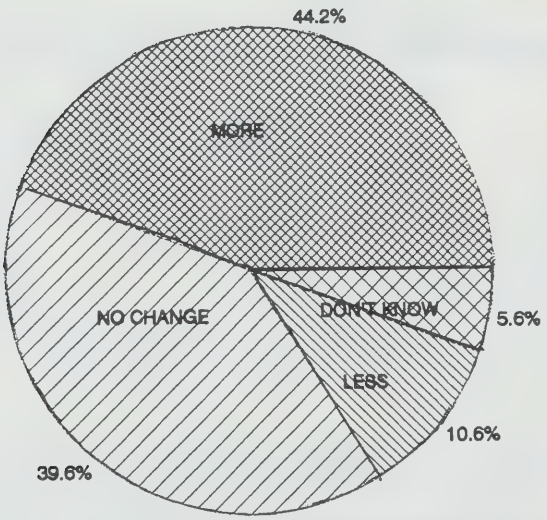
The number of possible response categories were slightly different in 1991 than in 1984 making it difficult to directly compare results. However, in 1991, 71.6% of those without belts gave inconvenient, short trip or forgot as their reason. These are situations or states resulting in non belt use that are amenable to change through educational and enforcement initiatives. "Unnecessary" dropped from 21.8% in 1984 to 5.3% in 1991 while other responses showed little change.

5.6 Opinion of Enforcement Levels

When drivers were asked whether enforcement of the seat belt law should be more or less stringent, 44.2% replied "more", 10.6% "less", 39.6% "no change" and 5.6% "don't know" (Figure 22).

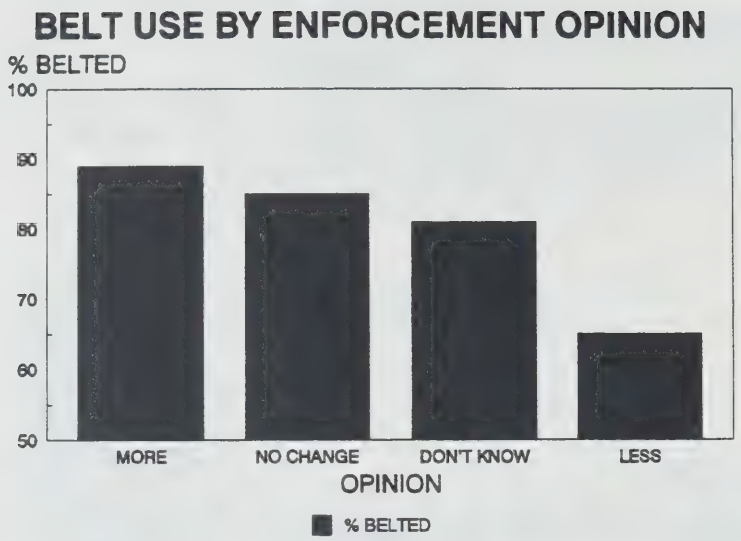
Figure 22

DRIVERS OPINION ON SEAT BELT ENFORCEMENT



Results revealed that 89% of those stating enforcement should be increased were belted compared to only 65% of those saying it should be less stringent. Those stating enforcement should not change and those who responded "don't know" had compliance rates of 85 and 81% respectively (Figure 23).

Figure 23

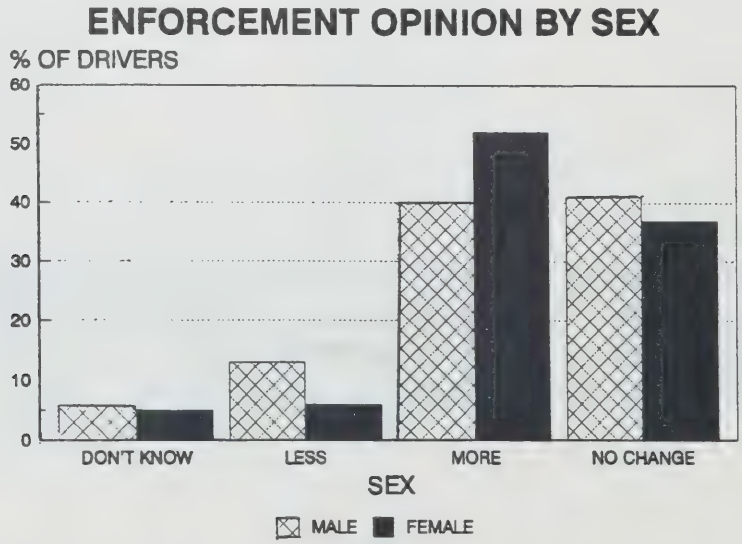


The following compares enforcement level response by gender:

	Males	Females
More	40%	52%
Less	13%	6%
No Change	41%	37%
Don't Know	6%	5%

Figure 24 compares the sexes responses in graphical form.

Figure 24

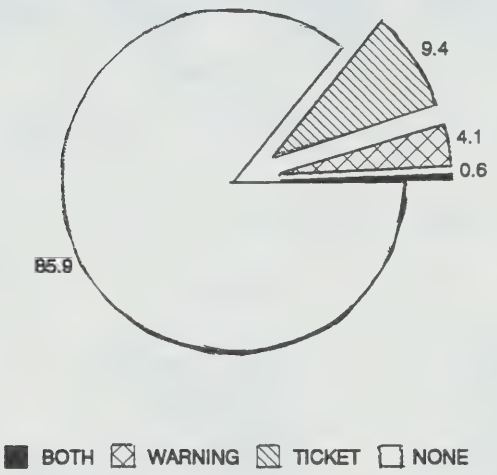


5.7 Warning or Ticket

When asked whether they had ever received a warning or ticket for not wearing a seat belt, 4.1% admitted to having been given a warning, 9.4% a ticket, 0.6% both a warning and ticket and 85.9% neither a warning or ticket (Figure 25).

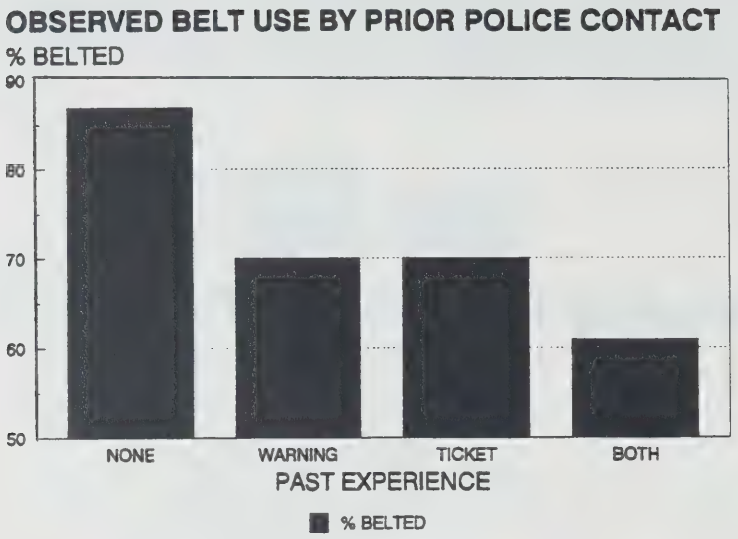
Figure 25

PRIOR SEAT BELT CHARGES FOR DRIVERS



Interestingly, only 61% of those receiving both a warning and ticket were belted compared to 70% of those having received a ticket, 70% of those having received a warning and 87% of those who had never received either suggesting enforcement does not change the behaviour of some people (Figure 26). However, there were a total of 1,879 people who had prior police contact for not using seat belts, of which 1313 or 70% were belted at the time of this survey.

Figure 26

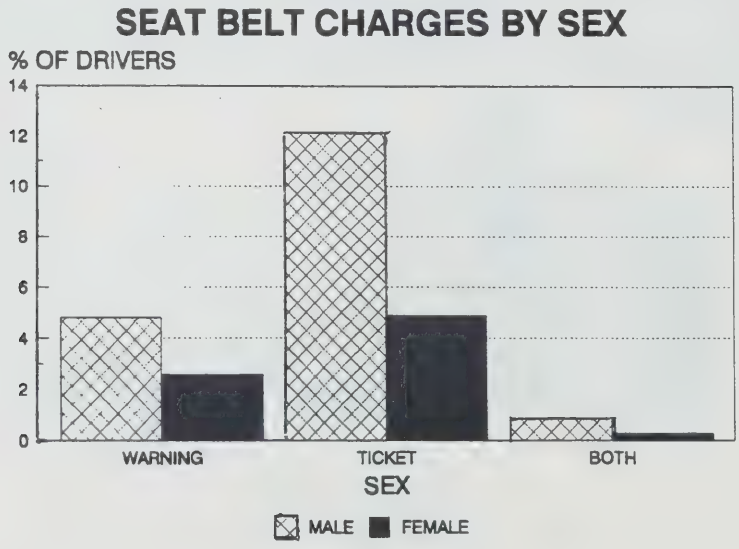


The following compares response by gender:

	Males	Females
Warning	4.8%	2.6%
Ticket	12.1%	4.9%
Both	0.8%	0.3%
Neither	82.3%	92.2%

Figure 27 compares the sexes responses in graphical form.

Figure 27

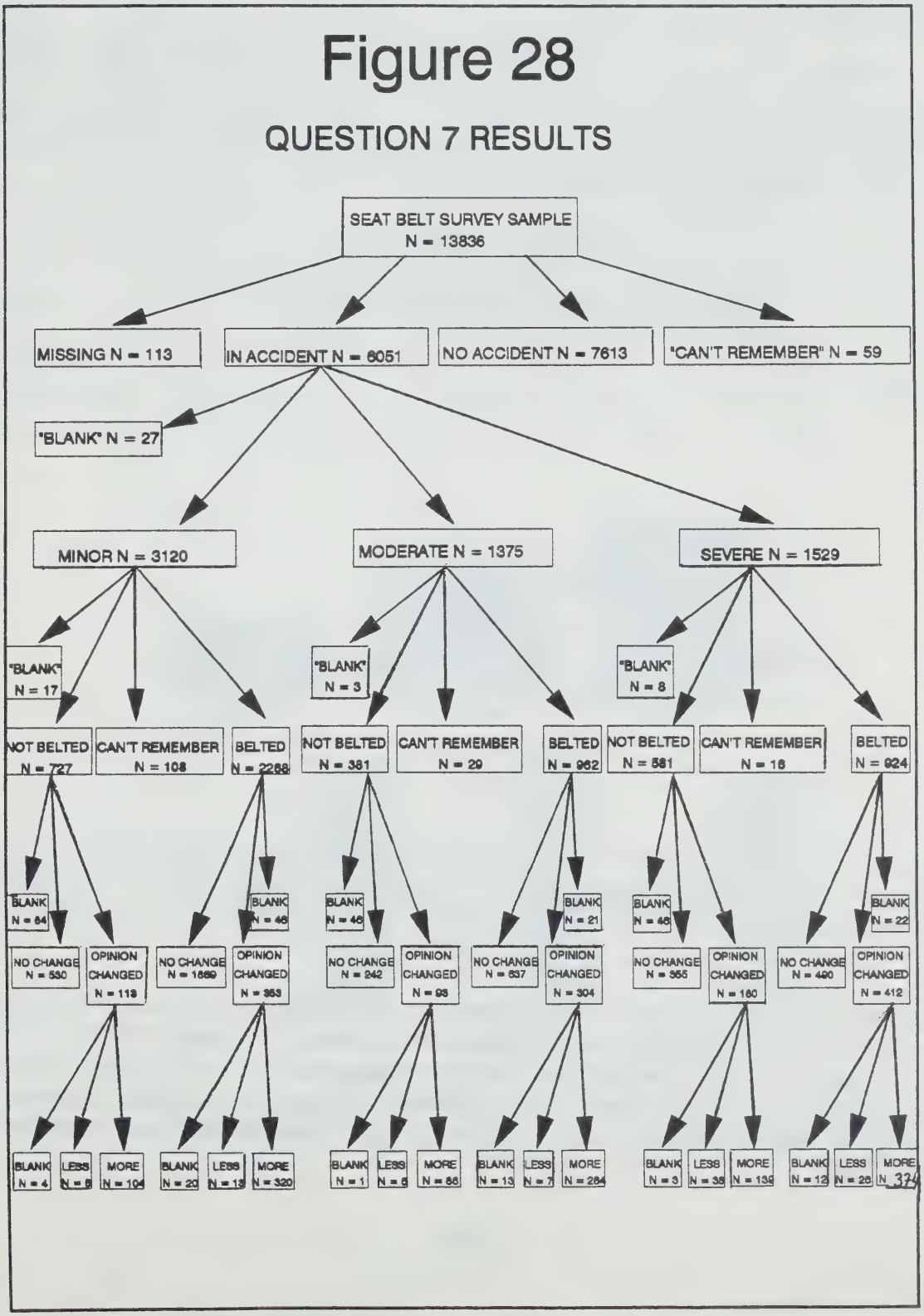


5.8 Accident History and Belt Use

Question 7 on the questionnaire was a multi level question as can be seen from Appendix A. The sample sizes of each "box" or "layer" can be seen in Figure 28.

Figure 28

QUESTION 7 RESULTS

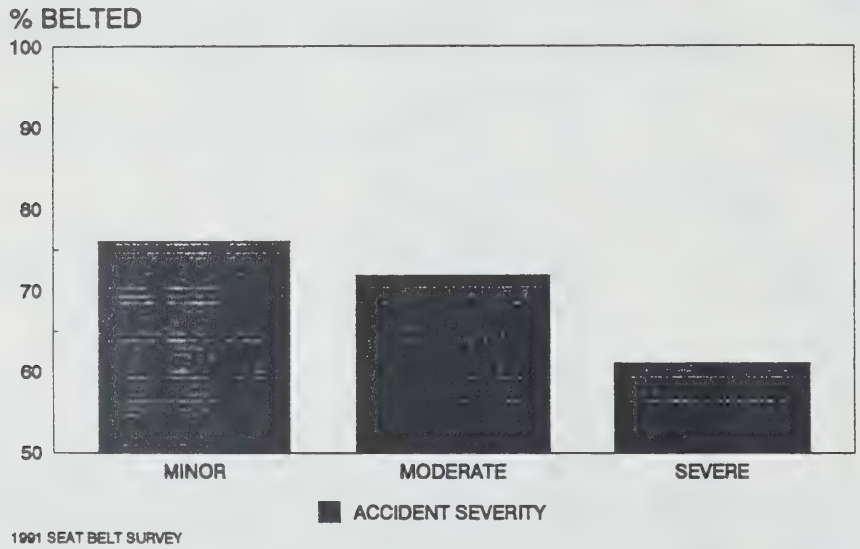


Of the 13,836 cars stopped, 113 questionnaires did not have question 7 answered, and 59 "couldn't remember" if they had been involved in an accident. Of the remaining 13,664, 7,613 or 56 % said they had not been, and 6,051 or 44 % said they had been in a motor vehicle accident. Of the 6,051 who reported being in an accident, 27 cases did not have severity of accident coded.

Of the remaining 6,024, 3,120 or 52% reported having been in a minor crash, 1,375 or 23% in a moderate accident, and 1,529 or 25% in a severe motor vehicle collision. Looking at the percentage of belt use by severity of crash, 76% of the minor, 72% of the moderate and only 61% of the severe accident group (Figure 29) reported being belted at the time of collision (Chi Square p<.001).

Figure 29

BELT USE BY ACCIDENT SEVERITY



In the minor accident group there was no difference between the belted at collision and non belted at collision sub groups, in change of opinion towards belt use (eg. more or less likely to wear belts). 17.6% of the non belted and 16% of the belted "at crash" group reported a change in opinion (Non significant Chi Square).

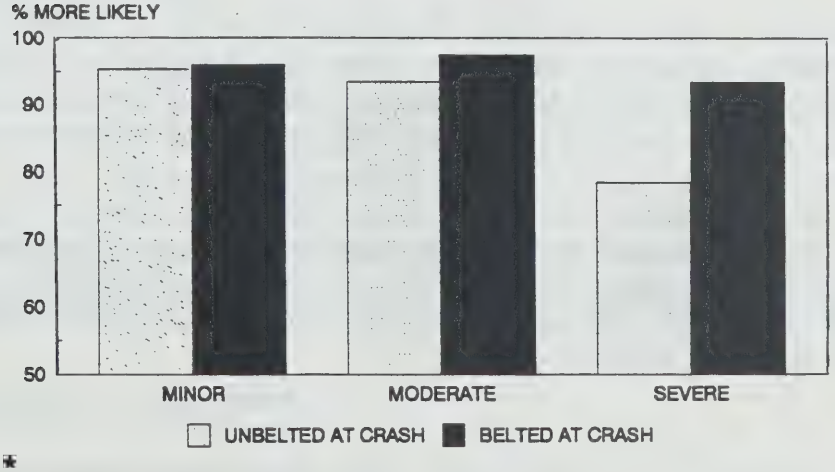
Collapsing across belt use, (combining belted and non belted) 16.3% of the minor group had an opinion change. Of the minor group whose opinion changed, 95.4% of the non belted at crash, and 96.1% of the belted at crash sub groups reported being more likely to wear their seat belts as a result (Non significant Chi Square). Collapsing across belt use, 95.9% of the minor group whose opinion changed reported they were more likely to use seat belts.

In the group reporting to have been involved in a crash of moderate severity, 27.7 % of the non belted group, and 32.3% of the belted group reported a change in opinion to seat belt use (Non significant Chi Square). Collapsing across belt use, 31% of the moderate accident group reported a change in opinion. Of those in the moderate group who reported a change in opinion, 93.5% of the non belted, and 97.6% of the belted at crash sub groups, reported to be more likely to wear a seat belt as a result (Non significant Chi Square). Collapsing across seat belt use 96.6% of the moderate group whose opinion changed reported they were more likely to use belts.

In the group reporting having been in a severe accident, 33.6% of the non belted and 45.7 % of the belted at crash sub groups reported a change in opinion. This difference is significant (Chi Square p<.001). Collapsing across seat belt use, 41.2% of the severe accident group reported a change in opinion. Of those who reported a change, 78.5% of the non belted and 93.5% of the belted at crash sub groups reported being more likely to wear their seat belt as a result (Chi Square P<.001). This difference in the belted and unbelted groups opinion change towards seat belt use was not found in the minor and moderate groups. The percentage of those with an attitude change who were more likely to wear belts is shown in Figure 30 for both belted and unbelted drivers in the three accident groups. Collapsing across seat belt use, 88.9% of the severe group whose opinion changed reported they were more likely to use belts.

Figure 30

% OF BELTED AND UNBELTED AT CRASH OCCUPANTS MORE LIKELY TO USE BELTS AS A RESULT OF ACCIDENT BY ACCIDENT SEVERITY*



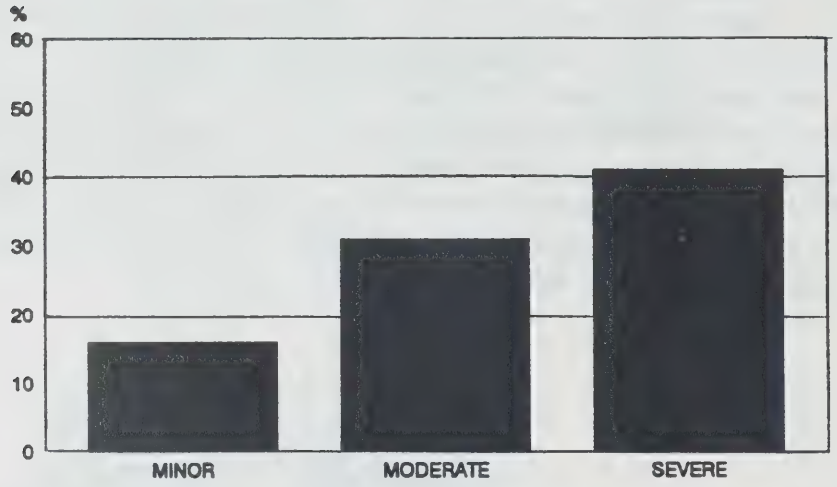
* FOR THOSE WITH AN OPINION CHANGE

5.8.1 Accident Summary

Comparing the three accident categories with belt use collapsed, 41% of the severe accident group said their opinion of seat belts had changed compared to 31% of the moderate and 16% of the minor accident groups (Chi Square at p<.001) (Figure 31).

Figure 31

PER CENT WITH OPINION CHANGE BY ACCIDENT SEVERITY

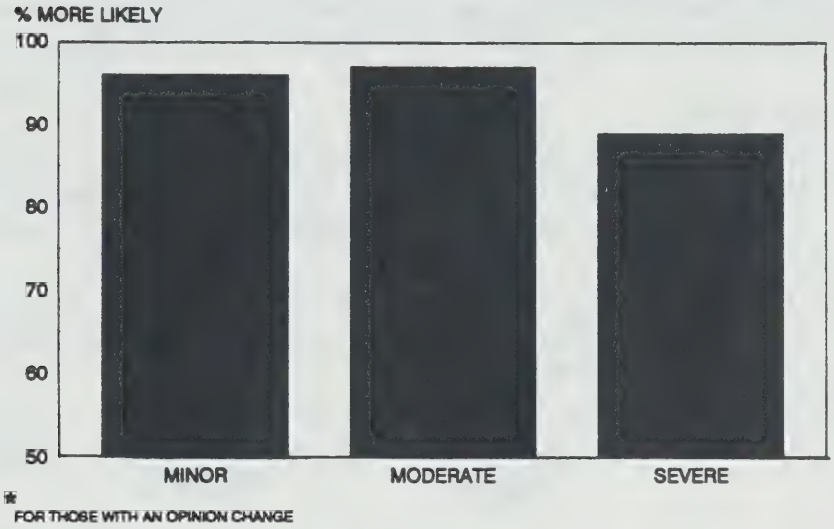


Of the people whose opinion changed, 89% of the severe group reported they were more likely to use belts compared to 96% of the minor and 97% of the moderate groups (Chi Square p<.001) (Figure 32). As noted previously, 76% of the minor, 72% of the moderate and only 61% of the severe accident group (Figure 29) reported being belted at the time of collision.

In summary, the results show that the more serious the collision the less likely the person was wearing a seat belt at the time, and the more likely a person changed their opinion of seat belts. Overall, 93.2% of those who reported an opinion change, stated they were more likely to wear a belt as a result.

Figure 32

PER CENT MORE LIKELY TO USE BELTS AS A RESULT OF THE ACCIDENT, BY ACCIDENT SEVERITY *



* FOR THOSE WITH AN OPINION CHANGE

5.9 How Long In Ontario

The question asking how long the driver had lived in Ontario was designed to receive both a response of "always" or the actual number of years. There were 5,626 drivers who responded "always", while the remainder had an average response of 30.7 years.

5.10 Ontario Driver's Licence

Of the drivers, 2,727 or 19.8% of the total claimed to have had a drivers licence in another province or country with 2,714 giving the name of the other jurisdiction. Of the 2,714, 53.7% had a licence in another Canadian province, 45.1% in another country and 1.2% in both another country and Canadian province. The mean number of years licensed in another province or country was 9.5 years with a standard deviation of 8.5. Of the drivers who had only held an Ontario licence, 83.6% were belted compared to 87.8% of those claiming to have held a driver's licence elsewhere.

5.11 How Often Do You Wear Belts

Drivers were asked "How often do you wear a seat belt?". The following results show the percentage of drivers in each response group, as well as the proportion who were actually belted at the time of the survey.

Response	% Giving Response	% Belted
Always	76.9%	96.6%
Most Time	13.7%	56.1%
Half Time	3.7%	34.6%
Less Half	3.1%	42.5%
Never	2.5%	8.4%

The following compares responses by gender:

	Males	Females
Always	72%	86%
Most Time	16%	10%
Half Time	5%	2%
Less Half	4%	1%
Never	3%	1%

6 SURVEY RESULTS SUMMARY

The 1991 Summer Seat Belt Survey shows a substantial increase in belt use rates in drivers and passengers compared to the 1984 survey. A larger number of infants and toddlers are being restrained though errors continue to be made in the type and use of child restraints. There are regional differences across Ontario with the three southern regions having the highest driver and adult passenger usage rates.

Females continue to have better compliance rates than males. Females appear to support the need for increased seat belt enforcement to a greater extent than males, report having been in fewer and less severe accidents, report fewer tickets and warnings for not wearing belts, and a greater percentage report always wearing their seat belts.

Older drivers and passengers have greater compliance rates than younger occupants though the youngest age group of drivers and passengers have made the greatest gains in usage rates. For drivers however, this occurred in the three southern regions while adult passenger belt use could not be broken down by age and region for 1984. If this increased improvement continues in the young age groups, the large gender effect that has been present since belt legislation was passed, may cease to exist or become greatly diminished in magnitude.

Belted drivers were more likely to give safety as a reason for wearing belts in 1991 than in 1984 while the percentage citing "law" decreased. Undoubtedly, media campaigns on seat belts has contributed to this increased public awareness.

A number of questions were asked in 1991 that were not asked in 1984. Categorizing belt use by response to questions revealed some interesting findings.

From the responses to the first question it was found that belt use varied by purpose of trip. Those drivers on business had the lowest compliance rate while those on vacation had the highest.

Distance from home was positively correlated with belt use. Figure 23 shows seat belt usage rate by distance group. The largest difference exists between the 0-2 kilometre and the 2-10 kilometre, group. Smaller increases occur between each of the distance groups there after. This corroborates the impression many have that people are less likely to wear belts on short trips. The belt use rate by time in car also agrees with this position where the 0-5 minute group had the lowest compliance rate. Indeed an even more dramatic increase is seen in the compliance rates of the 0-5 to 5-15 minute groups than any subsequent increase by time group (Figure 24).

As far as accident history was concerned, the results show that the more serious the crash the less likely the person was wearing a seat belt at the time, and the more likely a person changed their opinion of seat belts as a result. Overall, 93.2% of those who reported an opinion change, stated they were ***more*** likely to wear a belt as a result.

A driver's opinion on whether enforcement of the seat belt law should be more or less stringent was also related to usage rate. A smaller proportion of those stating enforcement should be less were belted compared to those who stated enforcement should be greater.

As well, a much smaller proportion of those who admitted having received a ticket, warning or both for not wearing seat belts, were using restraints compared to those who had never received either. However, there were a total of 1,879 people who had prior police contact for not using seat belts, of which 1,313 or 70% were belted at the time of this survey.

7.0 CONCLUSION

The results of the 1991 Seat Belt Survey are very encouraging. Tremendous gains have been made in increasing seat belt usage in young adults, youth and small children as a result of education and enforcement initiatives. There have also been areas and variables identified that are related to lower belt compliance, distance from home, time in vehicle, sex, age, etc. that can be targeted for increased education and enforcement. There is however, a small group of hard core non users for whom education, enforcement and even severe accident experience, does not appear to be influencing behaviour. As compliance rates rise, it is this group who will require more and more attention. Interestingly, it is this group who, when belted, will provide the greatest savings in terms of lives saved and injuries prevented. As belt use goes up a greater proportion of unsafe drivers buckle up. As a result, more and more injuries are prevented for each successive unit increase in compliance rate. This is especially exciting in the 1990's as the province strives for 100% compliance.

APPENDIX A

Seat Belt Questionnaire

Location # _____

Date _____

Time _____

Day / Week M T W T F S

Interviewer # _____

"Good morning/afternoon. I work for the Ministry of Transportation and we are conducting a survey on seat belts. I would like to ask you a few questions. First:"

1) What is the purpose of your trip? (Do not give categories)
   a) Shopping ☐ b) Business ☐
   c) Visiting/Pleasure ☐ d) Vacation ☐
   e) Errand ☐ f) Other_____

2) How far are you from your place of residence?
   Miles _____ or Kilometres _____

3) What do you estimate will be the total time spent in your car from the time you got in until you arrive at your destination. _____Min. or _____Hours

Observed use of belts. Wearing go to 4a. Not wearing go to 4b.

4a) What is your main reason for wearing your seat belt now? (Don't give categories)
   Law ☐ Safety ☐ Other _____

4b) What is your main reason for not wearing seat belts? (Don't give categories)
   Inconvenient ☐ Unnecessary ☐ Forgot ☐
   Unsafe ☐ Short trip ☐ Get trapped ☐
   Medical Exemption ☐ Other_____

5) Do you think enforcement of the seat belt law by the police should be more or less stringent than it is now?
   More ☐ Less ☐ No change ☐ Don't Know ☐

6) Have you ever received a warning ☐ or ticket ☐ from a police officer for not wearing your seat belt? No ☐

7) Have you ever been in a motor vehicle accident as driver or passenger? Yes ☐ No ☐ Can't remember ☐
   (If no or can't remember, go to 8.)

   In your opinion, was it minor ☐ moderate ☐ severe ☐

   Were you wearing your seat belt? Yes ☐ No ☐
   Can't remember ☐
   Did this change your opinion of seat belts?
   Yes ☐ No ☐ (If "no", go to 8)

   Are you more ☐ or less ☐ likely to wear one as a result?

8) How long have you lived in Ontario? ____Years ☐ Always

9) How long have you had an Ontario driver's licence? _____ years or _____ months

10) Have you ever had a driver's licence in another province or country? Yes ☐ No ☐
    (If yes, continue; if No, go to 11.)
    If so, where: _____ How long _____

11) How often do you wear your seat belt? (Give categories)
    Always ☐ Most of the Time ☐
    Half of the Time ☐ Less than Half ☐ Never ☐

Thank you for participating in this survey.
Have a safe trip.

Seat Position	Driver	Front 1	Front 2
Age			
Sex	M F	M F	M F
Lap Belt	Y N IM NI CS	Y N IM NI CS	Y N IM NI CS
Shoulder	Y N IM NI CS	Y N IM NI CS	Y N IM NI CS
CHILD RESTRAINTS			
Holding on Lap / Age			
Rear Facing			
Front Facing			
Booster Seat			
Anchored by Seat Belt		Y N IM CS	Y N IM CS
Tether anchored (Front Facing Only)		Y N IM CS	Y N IM CS
Harness Fastened If Occupied		Y N IM CS	Y N IM CS

REAR SEAT

Seat Position	Rear 1	Rear 2	Rear 3
Age			
Sex	M F	M F	M F
Lap Belt	Y N IM NI CS	Y N IM NI CS	Y N IM NI CS
Shoulder	Y N IM NI CS	Y N IM NI CS	Y N IM NI CS
CHILD RESTRAINTS			
Holding on Lap / Age			
Rear Facing			
Front Facing			
Booster Seat			
Anchored by Seat Belt	Y N IM CS	Y N IM CS	Y N IM CS
Tether anchored (Front Facing Only)	Y N IM CS	Y N IM CS	Y N IM CS
Harness Fastened If Occupied	Y N IM CS	Y N IM CS	Y N IM CS

NI - Not installed
IM - Improper Use
N - No
Y - Yes
CS - Can't see
N/A - Not applicable

APPENDIX B

1991 SEAT BELT SURVEY SITES BY DATE

02/07/91

RICHMOND HILL
HIGHWAY 11
IN FRONT OF RICHMOND HEIGHTS PLAZA

NEWMARKET
YORK ROAD 31, DAVIS DRIVE
A POINT .8 KM WEST OF YORK ROAD 8, WOODBINE AVENUE

STOUFFVILLE
HIGHWAY 47
BETWEEN HIGHWAY 48 AND STOUFFVILLE

KING CITY
HIGHWAY 400
OFF RAMP AT B.P. SERVICE CENTRE

03/07/91

TORONTO
YONGE STREET
SOUTH OF MUIR PARK HOTEL NORTH OF GLENGROVE

TORONTO
EGLINTON AVENUE EAST
IMMEDIATELY EAST OF THERMOS AVENUE WEST OF WARDEN

MISSISSAUGA
ERIN MILLS PARKWAY
N OF HWY 5 AT ERINDALE COLLEG.(IS ALSO STAT. 621)

SUTTON
YORK ROAD 8A, BASELINE RD
AT APPROXIMATELY THE WEST LIMITS OF SUTTON

04/07/91

TORONTO
THE QUEENSWAY
IMMEDIATELY EAST OF ISLINGTON AVENUE

TORONTO
KINGSTON ROAD
200 FT EAST OF ROCKWOOD, WEST OF BELLAMY

TORONTO
BLOOR STREET
BETWN SHERBOURNE & PARLIAMENT FRONT OF POST OFFICE

PORT CREDIT
HIGHWAY 2
IMMEDIATELY WEST OF MISSISSAUGA ROAD

05/07/91

TORONTO
EGLINTON AVENUE WEST
IMMEDIATELY EAST OF KIPLING AVENUE

OSHAWA
KING STREET, HIGHWAY 2
BETWEEN MARY AND DIVISION STREETS

OSHAWA
SIMCOE STREET NORTH
BETWEEN EASTWOOD AVENUE AND WAVERLY ROAD

06/07/91

TORONTO
MEADOWVALE ROAD
NORTH OF SHEPPARD AVENUE ON THE BRIDGE

OSHAWA
WHITBY MALL
AT NICHOL AVENUE EAST OF THICKSON ROAD

RICHMOND HILL
HILLCREST MALL
ON THE FEEDER STREETS HILLCREST GATE & DENAVA GATE

BRAMPTON
CHAROLAIS (EB)
NEAR HWY 10 AND STEELES BETWN BACH AND MCMURCHY

10/07/91

SAULT STE MARIE
BAY STREET
IN FRONT OF STATION MALL BETWEEN BRUCE AND DENNIS

ALGOMA (DISTRICT OF)
HIGHWAY 17
.8 KM NORTH OF SECONDARY HIGHWAY 556, HEYDEN

11/07/91

ALGOMA (DISTRICT OF)
SECONDARY HIGHWAY 556
IN FRONT OF LUMBER MILL

SUDBURY
CEDAR STREET
BETWEEN INTERSECTIONS OF PARIS AND REGENT STREETS

KIRKLAND LAKE
GOVERNMENT ROAD
IN FRONT OF AIR MOTEL

12/07/91

SAULT STE MARIE
2ND LINE
IN FRONT OF PUBLIC UTILITIES COMMISSION

SUDBURY
WALFORD STREET
BETWEEN INTERSECTIONS OF PARIS AND REGENT STREETS

KIRKLAND LAKE
GOVERNMENT ROAD
IN FRONT OF OLD MINE SHAFT

13/07/91

SAULT STE MARIE
NEAR CHURHILL PLAZA
AT WELLINGTON STREET EAST AND TRUNK STREETS

SUDBURY
NEAR SUDBURY MALL
ON TWO FEEDER STREETS, BARRYDOWN AND HOLLAND

KIRKLAND LAKE
GOVERNMENT ROAD
BETWEEN SHOPPING MALL AND TOWN CENTRE

16/07/91
KAPUSKASING
ASH STREET
NORTH OF BRUNETVILLE ROAD

17/07/91
KAPUSKASING
CAIN STREET
BETWEEN SHEPHERD AND TRAFFIC CIRCLE

23/07/91 **RAINED OUT**
KINGSTON
BROCK ROAD
S. SIDE WEST OF SYDENHAM ST PAST HOTEL DIEU HOSP.

25/07/91
BRACEBRIDGE
MUSKOKA ROAD 4
IN FRONT OF INDUSTRIAL MALL

27/07/91
ST CATHARINES
FAIRVIEW MALL PLAZA
GENEVA STREET

14/08/91
ST THOMAS
FIRST STREET
IMMEDIATELY SOUTH OF WELLINGTON STREET

KITCHENER
WATERLOO ROAD 9
2.3 KM EAST OF WATERLOO ROAD 12, ST AGATHA

HANOVER
BRUCE ROAD 10
1.8 KM NORTH OF ELMWOOD

15/08/91
ST THOMAS **RAINED OUT**
TALBOT STREET (HIGHWAY 3)
IN A & P PARKING LOT

WATERLOO
HIGHWAY 86
N. OF N. JUNCTION OF WATERLOO RD 15, HIEDLBURG RD

PORT ELGIN AREA
HIGHWAY 21
IMMEDIATELY NORTH OF PORT ELGIN NORTH LIMITS

16/08/91

LONDON
OXFORD STREET
IMMEDIATELY EAST OF HYDE PARK ROAD

LONDON
SPRINGBANK DRIVE
WEST OF KERNOHAM PARKWAY IN FRONT OF A & P STORE

SARNIA
FRONT AND NELSON STREET
IN CENTENNIAL PARK

SARNIA
INDIAN ROAD
NORTH OF HICKORY STREET

WOODSTOCK
HIGHWAY 401
OFF RAMP, EASTBOUND TO SERVICE CENTRE

17/08/91

LONDON
SOUTHDALE ROAD (EB)
BETWEEN WHARNCLIFFE ROAD AND VERULAM STREET

SARNIA
MODELAND ROAD (SB)
IMMEDIATELY NORTH OF HIGHWAY 42 INTERCHANGE

KITCHENER
BY FAIRVIEW PK SHOP. CNTR
KINGSWAY DR., W OF CEDAR WOODS CRT, E OF ENTRANCE

21/08/91

PETERBOROUGH
HIGHWAY 7
JUST OUTSIDE OF THE O.P.P. STATION

PETERBOROUGH
ROAD 16
.4 KM N OF PETERBOROUGH RD 14, N ON RD TO ENNISMOR

PETERBOROUGH
NEAR THE DOMINION MART
CLONSILLA AVENUE (SB), NORTH OF LANDSDOWNE

KINGSTON
KING STREET
BETWEEN LIVINGSTON AND PEMBROKE STREETS

KINGSTON AREA
HIGHWAY 2, 1.6 KM WEST OF
CNTY LINE BETWN FONTENAC, LENNOX & ADDINGTON CNTY

22/08/91

BROCKVILLE
PARKDALE AVENUE
IMMEDIATELY WEST OF ST LAWRENCE COLLEGE ENTRANCE

KINGSTON
HIGHWAY 33 AND BATH ROAD
0.8 KM WEST OF MCEWEN ROAD

23/08/91

OTTAWA **TOO MUCH TRAFFIC**
SLATER STREET
SOUTH SIDE BETWEEN BANK AND O'CONNER STREETS

OTTAWA
HERON STREET
BTWN INTERSECTIONS OF BRIAR HILL RD & JEFFERSON ST

BROCKVILLE
PEARL STREET
BETWEEN VICTORIA AND GARDEN STREETS

KINGSTON AREA
DESERONTO ROAD 1, 0.2 KM
EAST OF HASTINGS AND LENNOX & ADDINGTON ROAD 10

24/08/91

OTTAWA
BASELINE
NEAR WOODRIFFE

OTTAWA
CARLING AVENUE
NEAR MERIVALE ROAD

BROCKVILLE
NEAR BROCKVILLE SHOP.CNTR
CENTRAL AVENUE (WB) NEAR STEWART

KINGSTON **RAINED OUT**
FRONTENAC RD 3
1.7 KM E. OF JCT OF FRONTENAC RD 10, DIVISION ST N

BELLEVILLE
BELLE BOULEVARD
NEAR NORTH FRONT STREET

27/08/91

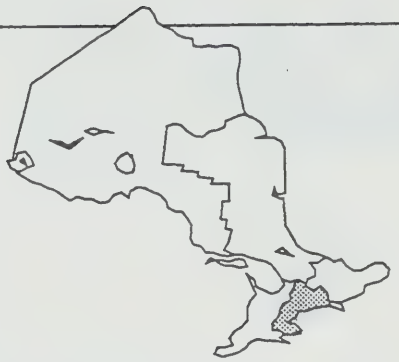
ST CATHARINES
ONTARIO STREET
BETWN SCOTT & MANCHESTER, FRONT OF PARKLANE MOTEL

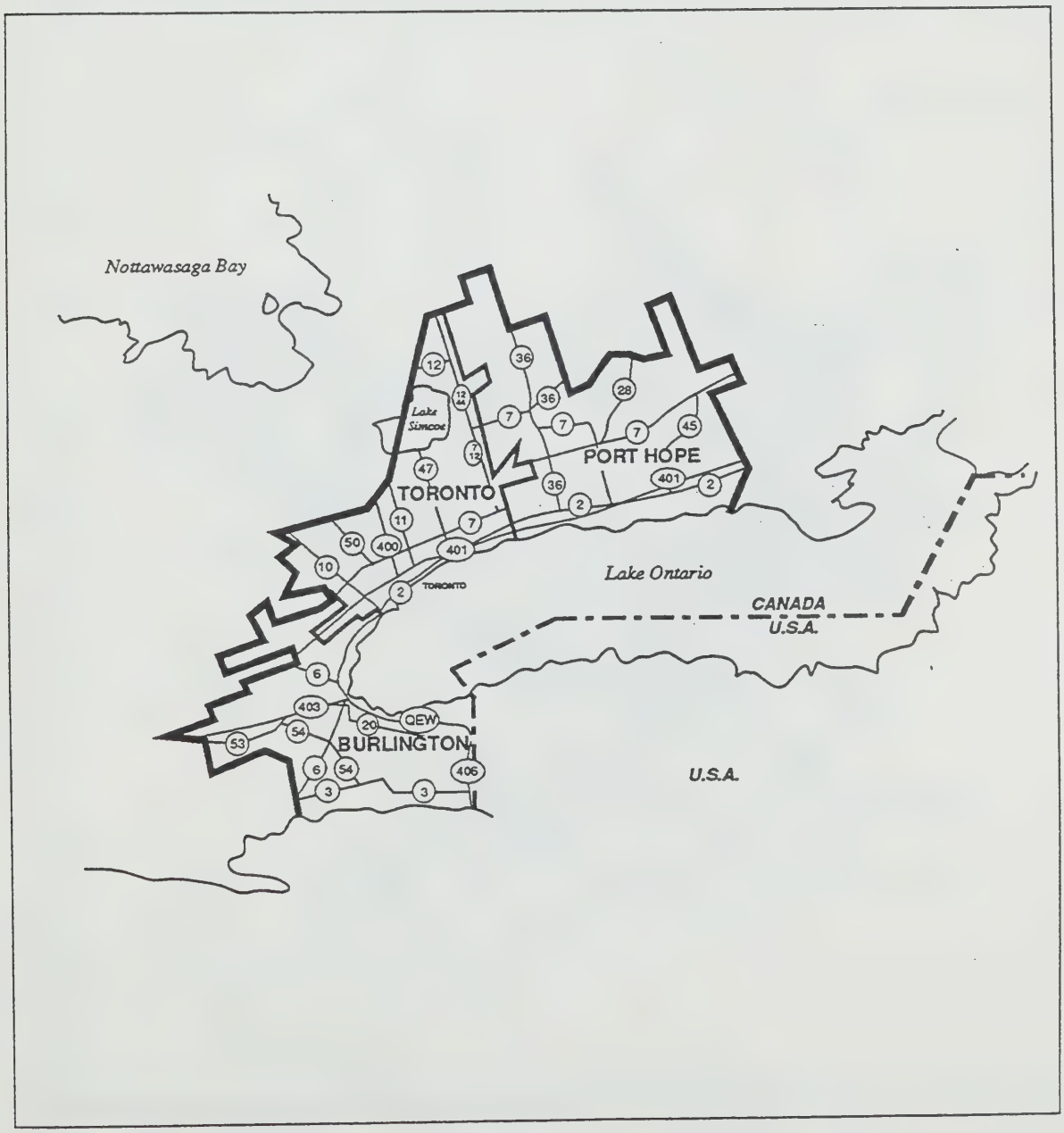
28/08/91

MUSKOKA
HIGHWAY 69
IMMEDIATELY SOUTH OF MUSKOKA ROAD 38

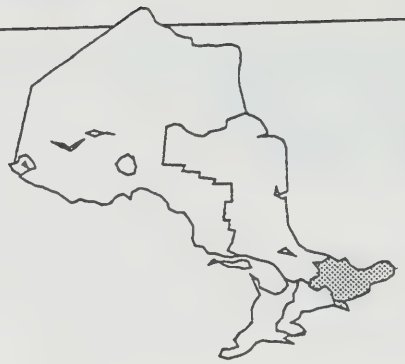
APPENDIX C

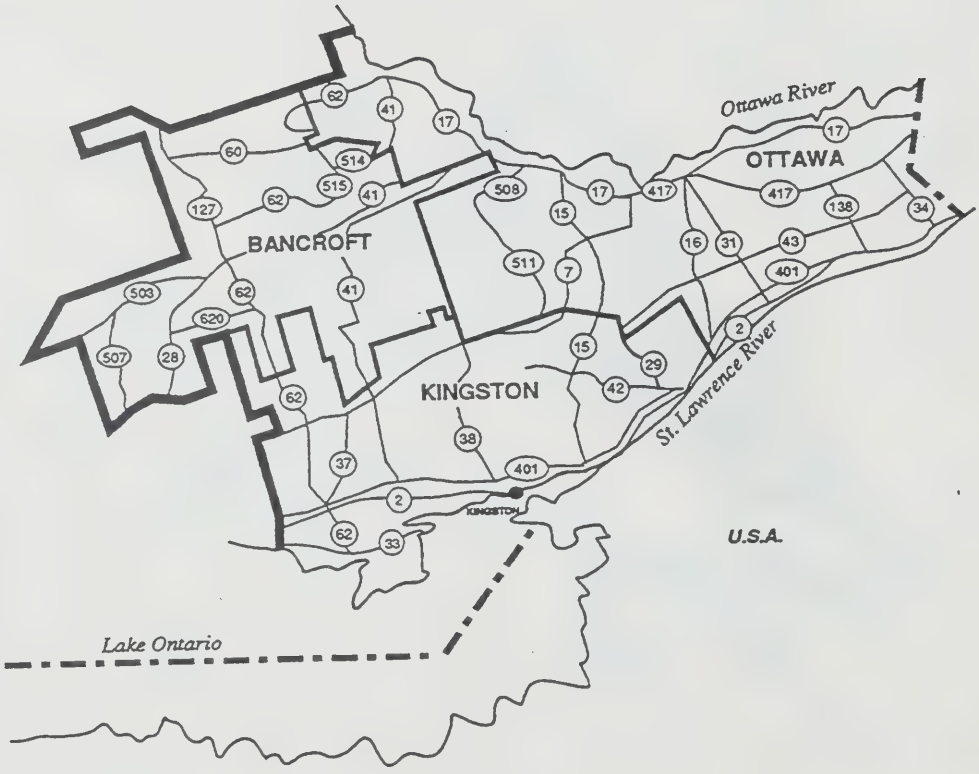
CENTRAL REGION



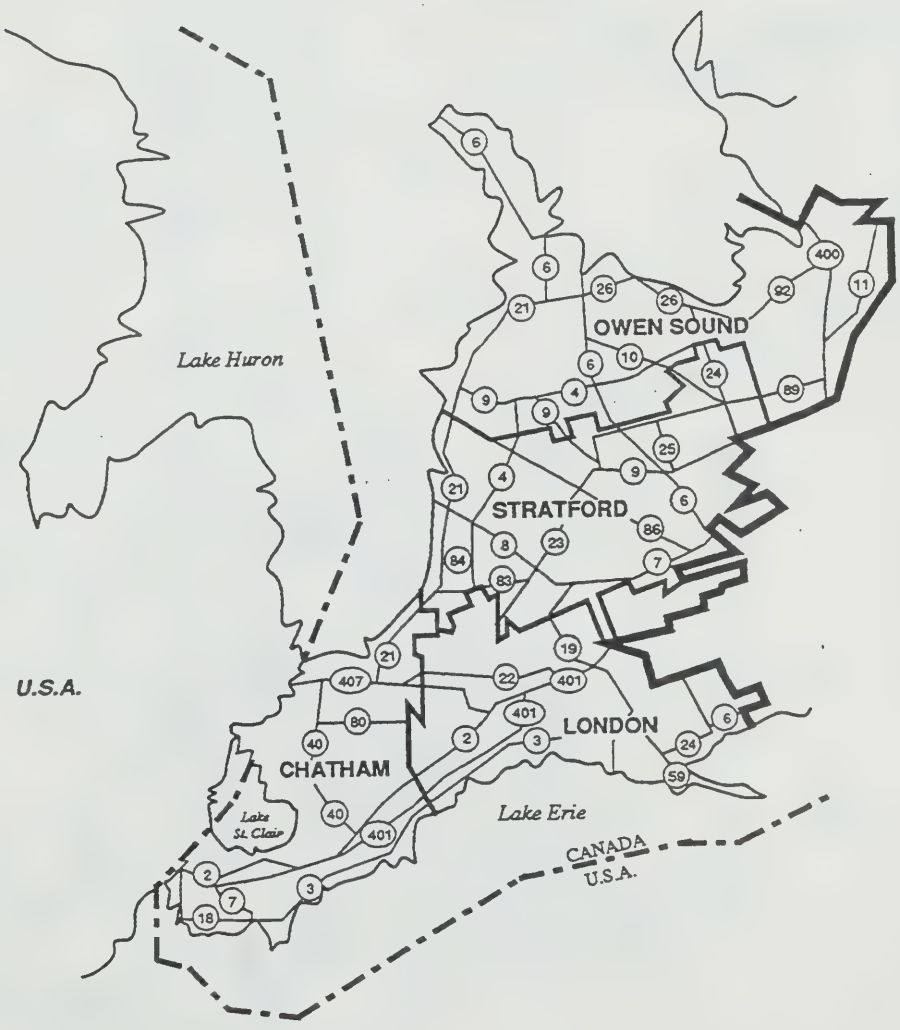


EASTERN REGION

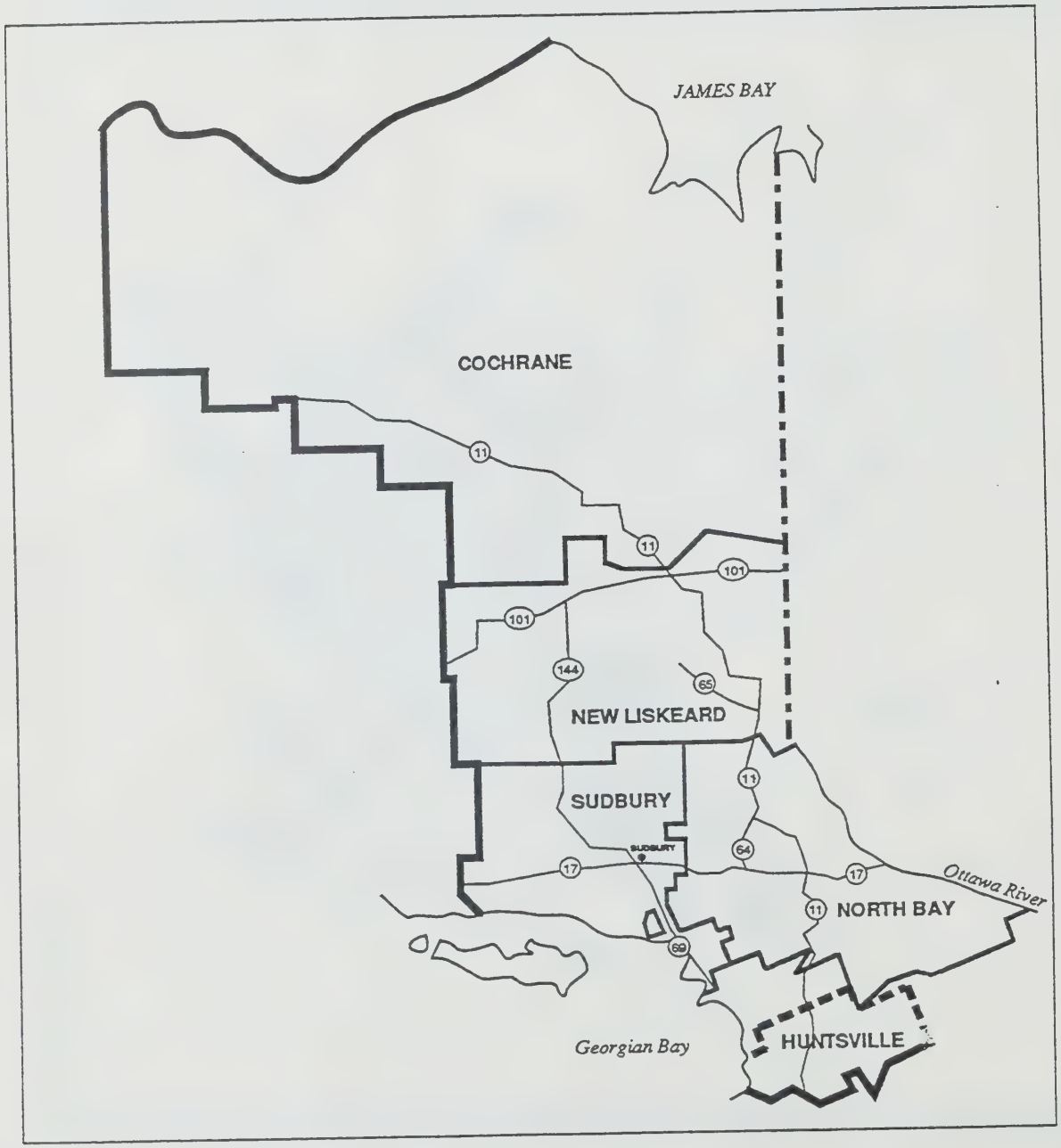




SOUTHWESTERN REGION



NORTHERN REGION



NORTHWESTERN REGION